The Audio-Visual Reader

KINDER · McCLUSKY

About the Contents...

THE AUDIO-VISUAL READER is not just a book of readings, it is a practical handbook and ready reference which will show the teacher how to utilize audio-visual materials in teaching, and the administrator and co-ordinator how to organize and administer an instructional materials program. It is broad in scope and covers all subject areas from the elementary school to the college and university.

A strong feature of this book is its organization into eight meaningful parts: (1) The Philosophy and Theory of Audio-Visual Instruction, (2) Audio-Visual Teaching Materials and Their Use, (3) Elementary Schools, (4) Secondary Schools, (5) Higher Education, (6) Administration of Audio-Visual Instruction, (7) Research and Utilization, and (8) Miscellaneous.

The book will give the beginner in the audio-visual field an opportunity to become quickly oriented because nearly two hundred articles written by over one hundred forty authors, committees, and commissions are included. Within the covers of this one book the reader will find the history and development of the concepts of realistic and meaningful learning, as well as future trends. Furthermore, the reader will see the modern audio-visual influence on the armed services, hospitals, libraries, medicine, religion, and other related fields.

The selections presented in this book have been carefully sorted and screened from four decades of writings bearing either directly or indirectly an audio-visual instruction. The book is the result of years of close contact with audio-visual research, writing, experimentation, teaching, and administration by two of the leading audio-visual educators of the United States. Because the book has been so carefully planned, logically organized, and is so broad in scope, it should be a teachable and service-able addition to the teaching tools used in a variety of classes. Here is truly a definitive volume in audio-visual education.

THE AUDIO-VISUAL READER

THE AUDIO-VISUAL SERIES

Edited by

F. Dean McClusky

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AUDIO-VISUAL TEACHING TECHNIQUES

by F. Dean McClusky

THE A-V BIBLIOGRAPHY

by F. Dean McClusky

EVALUATIVE CRITERIA FOR AN AUDIO-VISUAL INSTRUCTIONAL PROGRAM

by John C. Schwartz, Jr.

LEARNING THROUGH SEEING WITH TACHISTOSCOPIC TEACHING TECHNIQUES

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AUDIO-VISUAL ADMINISTRATION

by Fred Harcleroad and William Allen, Editors

THE AUDIO-VISUAL READER

by James S. Kinder and F. Dean McClusky, Editors

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Preface

If anyone had attempted thirty-five years ago to compile a collection of readings in the field of visual education, he would have found a paucity of writings to select. In fact, the total of published materials would have scarcely been sufficient to fill a volume worthy of the name. However, by 1935 a source book of value could have been compiled, because the published expositions and reports of research had already attained considerable proportions.

The publication in 1950 of McClusky's bibliography which contained more than three thousand references indicated the extent of the continued growth in literature dealing with the use of audio-visual materials and techniques in education. However, a considerable portion of these references were to be found in magazines, bulletins, reports, monographs, leaflets and miscellaneous out-of-print, difficult-to-find sources. Students and teachers working with *The A-V Bibliography* have reported the need for a source book which would bring together under one cover a representative cross section of such fugitive writings. *The Audio-Visual Reader* is presented to fill this need.

It is hoped that the present collection will end the frustrating experience of running-down references on an audio-visual topic only to find that the sources containing them are not in the library. The small library in particular tends to make available only the permanently bound materials. *The Audio-Visual Reader* should fill a long-felt need both for library reference and as a classroom guide to modern audio-visual teaching techniques and practices.

The editors' decisions to include one article or reject another, in compiling the collection, were not purely arbitrary. They have been governed: first by their long experience as teachers of courses in the audio-visual field; and second, by the questions frequently asked during consultation by students, teachers, administrators and audio-visual specialists. An attempt has been made to include articles which will answer these Why? What? When? Where? and How? questions. Also, controversial writings have been included in order that the reader may benefit from differing points of view.

In choosing the materials for this book, the editors have had to be highly selective. Obviously, in a volume of this kind space is always of prime consideration. At the outset the editors decided to follow the outline and categories found in *The A-V Bibliography*. This determined the eight parts which constitute the divisions of the book. Articles and sources of all kinds were then read and evaluated. Ten audio-visual leaders throughout the country were asked for suggestions. The assistance gained from these experts was invaluable, but it must be understood that the editors take the responsibility for the inclusion or rejection of all materials.

The editors seeing the book in full perspective recognize that some might wish for more emphasis on one topic and less on another. The inclusion of certain topics, such as graphs, micro-film and micro-projection might have strengthened the book. Limitations of space are offered as an

explanation of omissions, although less space given to one topic might have made room for another. In truth, we recognize that a second volume with an entirely new set of selections could be prepared in which topics such as research and production could be given more emphasis.

The Audio-Visual Reader contains materials from forty-four sources. Included are articles from twenty educational journals, two yearbooks, a monthly news letter, eight bulletins, four proceedings of conferences, three monographs, one syllabus, one textbook, one Doctoral Abstract and three hitherto unpublished manuscripts. The writings of one hundred thirty-six different authors are included. In addition, there are excerpts from six reports of committees. The authors represent: classroom teachers at all levels, elementary, secondary and higher education; administrators; supervisors; researchers; librarians; audio-visual specialists on the building, city, county, state and institutional levels; business men; ministers; a museum specialist; editors; students; and a director of educational activities for a television station.

The broad coverage expressed in the body of the book should give the reader of it a head start on a comparative study of the audio-visual field.

We are deeply indebted to the publishers and authors who have been generous in giving permission to reprint materials. To list all here would be repetitious since each author, published and/or source is given at the head of each article. In particular, we wish to acknowledge the assistance of Dean K. McClusky who read, classified and evaluated articles, and to acknowledge the invaluable service of our wives Mary Lett Kinder and Sibyl Kemp McClusky who read proof and offered constructive criticism of our efforts. LeRoy D. Locke of the Wm. C. Brown Company was most helpful in suggesting page lay-outs and in his encouragement. Many people have contributed suggestions and advice which we gratefully acknowledge.

March, 1954

JAMES S. KINDER
F. DEAN McCLUSKY

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I   The Philosophy and Theory of Audio-Visual Instruction

A. PHILOSOPHICAL AND PHYSCHOLO-GICAL BACKGROUND

Why is there so much discussion these days about the use of audio-visual materials? Is it a fad? Mark Hopkins did a pretty good job with just a student and a log, didn't he? Why then, have schools, colleges, churches, unions, adult education organizations become so concerned with the use of motion pictures, models, mock-ups, field trips, dramatizations, demonstrations, exhibits, photographs, filmstrips, dioramas, slides, maps, charts, graphs, radio and recordings? What theoretical and practical basis is there for the wider use of these media of communication?

The Why of Audio-Visual Materials

By
EDGAR DALE

The News Letter. Vol. 13, No. 3, Dec., 1947. Pp. 1-4.

The first and age-old reason for the wide use of concrete and semi-concrete experiences relates to the problem of language and meaning. All communication is a sharing of an experience — making it common to two or more persons. This sharing, for example, will range from the meanings secured by a little girl playing with a doll who imitates and thus shares certain family experience, to a graduate course in child development which depends upon language abstractions at a high level of symbolism.

The ability to share important meaning is not confined to persons able to read. The illiterate six-year-old before coming to school has learned one or more meanings for at least 2500 different words. He knows what they mean because he has used them as a *means* of doing hundreds of different things — eating, playing, making, handling, hearing, and so on. He learns that glass breaks, that dogs bark, pencils write, stoves cook.

But when he starts to school, he is sometimes immediately faced with a new problem, learning about the world indirectly through the symbolism of written language. His dog at home that runs and barks has now become a pallid symbol — a series of little marks on a piece of paper. In arithmetic he is asked to find the difference between 8 and 10, and it doesn't seem to make any difference to his life. And as

William James once put it, "If it makes no difference, what difference does it make?"

Some youngsters become very skillful in handling these verbal symbols. They become our writers, our teachers, professors, professional people, our verbally facile people. They find it hard to understand why all people are not as skillful as they in language ability. But sometimes when the symbols used by some of these verbalists are reduced to operational terms, something that you can put your hands on, the words turn out to be little more than the foam on an ice cream soda, "sweet wind."

The problem of meaningless symbols is as old as language itself. It became worse as written language developed, and especially as language itself became an instrument of social stratification. We may have to learn two words for the same idea. Thus the poor man *sweats* and the rich man *perspires*. *Dinner* becomes *lunch* and *supper* becomes *dinner*. The *hired girl* becomes a *maid* and the *store clerk* becomes an *associate*. It is much more elegant to say that you are *fatigued* than to say you are *dog-tired*, to *extinguish the illumination* instead of *putting out the light*, to talk about *sputum* instead of *spit*. Indeed, as one examines certain formally written materials he sees that we literally have double-talk. We avoid the simple, homely way of saying something and substitute the elegant variation, usually well sprinkled with Greek and Latin derivatives.

And when symbols are memorized in school (because they are not understood), the trouble really starts. As teachers, we quickly learn that students may react with verbal accuracy to questions about history or geography or mathematics, but that they sometimes don't know what they are talking about. Here is a boy who reads aloud about the Pilgrims. It sounds all right until a question shows that he does not know the difference between a Pilgrim and a turkey. He would be a fine one to send out to shoot a turkey.

A related reason for meaningless symbols is that what we teach is not seen by the student as relevant to his life. The subject-matter has meaning only as a way of passing, of getting a grade. It represents "dated" learning—to be kept fresh only till the

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time of the examination. The very fact that drill and repetition are so widely used as teaching methods discloses the meaninglessness of material taught in this fashion. What educational psychologists think of these approaches is well illustrated by these quotations. Sidney Pressey in *Psychology and the New Education* says:

"Other things being equal, material will be remembered in proportion as it is meaningful, and it is the meaningful element in any given unit of subject matter which is best remembered. Learning will last in proportion as it is made significant to the learner."

What about repetition as a learning method? Here is what Thorndike says:

"The repetition of a situation may change a man as little as a message over a wire changes the wire. In and of itself, it may teach him as little as the message teaches the switchboard. . . . Experience, in the sense of merely confronting and responding to the situations of life, can hardly be a powerful agent for either good or harm when several thousand repetitions of such an experience do so little."

A second reason for failure of communication is the enormous increase in knowledge itself. Think of the range of health terms which an informed person should know—sulfanilimide, streptomycin, penicillin, complex, aggression, frustration, poliomyelitis, streptococcic infection, malignant, radium, X-ray. If we are to understand the UN, for example, we must have some acquaintance with words like General Assembly, Security Council, plebiscite, specialized agency.

Important knowledge about the world is increasing faster than we can distribute it. But fortunately, new inventions and new uses for old inventions are available to us. Here we come to the third "why" of audio-visual materials. Some of the audio-visual materials are "old," others are a variant on such materials. Some of them have been developed in the last twenty-five years.

Let us take the problem of communicating the meaning of atomic energy to the man on the street. We might ask a noted atomic scientist to do this. If he were as good a teacher of laymen as he is a scientist, he might be successful. Fortunately we do not have to depend upon this happy combination of abilities in one man. Instead, a film specialist brings able teachers of science into contact with the scientists. They diagnose the problem and put the necessary scientific principles into communicable form. The resultant film can endlessly reproduce to any audience in America some of the essentials of what Einstein, Urey, Bohr and others have found out, and thus provide a unique contact with expert teachers.

Today we are trying to explain the meaning of the Marshall Plan to the ordinary man. This can be done with ease and understanding through round-table discussions by economists who have mastered the art of teaching the layman. At Ohio State University, for example, a weekly Sunday radio program called "Economically Speaking" puts difficult economic principles into understandable and interesting terms. Those communities are fortunate indeed which have a publicly supported radio station such as WOSU (Ohio State University), WHA (University of Wisconsin), WSUI (State University of Iowa).

Audio-Visual materials on the problem of world trade are also available. There is a useful film titled "Round Trip." Simple charts, graphs, and posters which show key ideas about world trade are available or can be made. From time to time there will be radio discussions of world trade on the "University of Chicago Round Table," "Northwestern Reviewing Stand," "America's Town Meeting," "America's Forum of the Air," "CBS People's Platform."

And yet despite the need for richer and more varied experiences by students, despite the development of new tools for more effective communication, only a handful of schools are making regular and complete use of all media of communication. The reasons are fourfold. First, they lack the money. Many schools are increasing salary schedules to help teachers meet the very real consequences of inflation, and so have little money left to buy teaching materials.

Second, many teachers do not know how to use a slide, a film, or a radio program. They know how to assign a lesson in a textbook, how to use the anxiety motivation of grades, how to give the usual quizzes and exams. Further, they depend largely upon drill and repetition to put across material memorized from textbooks. Some teachers do not want to hazard their professional security by possible failure in learning to use the new method.

Third, not one teachers college in ten is giving adequate instruction in the use of radio, films, exhibits, field trips, etc. College professors in love with the sound of their own voices, "living textbooks wired for sound," cannot conceive that mechanical instruments could aid them in their classes.

Fourth, new administrative arrangements are necessary to use these new materials. Buildings may not have darkening facilities or electrical outlets. There is no storage space for films, recordings, models, slides, and filmstrips. Cast-iron class schedules cannot be changed to permit field trips. The chances are very good that most students will never have visited the important banks, stores, factories,

public offices, transportation centers of their city as a part of an educational activity.

The problems on which audio-visual materials are brought to bear are, then, both old and new. The history of education is a parade of men who tried to keep the work of the school meaningful. This is the central problem attacked by Erasmus, Locke, Comenius, Pestalozzi, Herbart, the McMurrys, John Dewey. It is the reason underlying apperception, the socialized recitation, correlation, the activity method, the project, progressive education. Even Mark Hopkins used more than a log. He gave dozens of speeches in western Massachusetts using a new-fangled device—a model of a man. This model cost him $600, which he paid out of his own annual salary of $1100.

Today, of course, our communication problem is a worldwide one. We must develop an enlightened people—no small task in a world of expanding and complicated meanings. But fortunately it is now possible to use the artist teacher not only to teach for us through radio or the motion picture, but also to teach the teachers. The Industrial Revolution brought to us the advantages of the machine. The revolution in communication methods will now enable us to make the industrial machine understandable to the people who run it.

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> Compare the two definitions of audio-visual education which follow with Swank's point of view expressed on pages 262-266.

Even though reading this page is a visual process, few people are wont to call it visual education. On the other hand, there are those who, by their statements and their practices, would claim that casually seeing the motion picture, *Servant of the People,* an excellent film on our Constitution, is audio-visual education. They would consider the same to be true of "just looking at" a study print, a series of lantern slides, an exhibit, or of "just listening" to a radio program. Of course no thinking person would deny that some educational gains might accrue from this limited use of audio-visual materials. However, these gains are insignificant when compared to those which result if audio-visual materials are used in terms of a broader concept of audio-visual education. If the film, *Servant of the People,* has been chosen because it meets an instructional need, if it is used in terms

What Is Audio-Visual Education?

**By
FRANCIS W. NOEL**

of good instructional practices appropriate to the particular aid, and if the result of the learning experiences are evaluated, then audio-visual education, clearly conceived of as the *use of certain materials as an integral part of the educational process,* is in operation.

This means (1) that the film or other aid is used in a classroom learning situation; (2) that the students know why they are seeing the film; (3) that they know how it is related to what they are studying; (4) and that they know what points to look for as they view it. It also means that there is a follow-up which will include (1) a discussion of the points which the students agreed to look for; (2) some sort of test, oral or written, to check on facts or concepts which have been gained or attitudes which have been affected; and (3) an opportunity for students to relate what they have learned to their other experiences or to apply their newly gained insights to some everyday problems. Next, the teacher makes some sort of an evaluation to determine whether the film has fulfilled its purpose and has been used successfully as an instructional tool. This evaluation may be objective or subjective, or both. It does not need to involve elaborate research. It may be a simple observation of students' interest, of the types of questions they ask, or of the nature of the follow-up discussion. Finally, evaluation will lead the teacher to improve her utilization practices in the light of her experiences in using the film. *Audio-visual education then refers to the carefully planned and integrated use in instruction of motion pictures, slides, filmstrips, stereoscopes, study prints, micro-projectors, radio, recordings, posters, maps, charts, graphs, exhibits, objects, models, field trips, and synthetic training devices.*

The Scottish Educational Film Association conceives of audio-visual education as a "link between the concrete and the symbolic, giving meaning to the latter and understanding to the former." This concept is certainly implicit in the foregoing explanation. But audio-visual education must not be considered simply a matter of materials and techniques or a new way of teaching the same old thing. The dynamic nature of the aids themselves—their content, organization and manner of presentation—make them potential means of presenting the inter-relationship of our interdependent society, of presenting the new patterns of life rooted in scientific discoveries and technological advances, and a means of securing the co-operation in thought and behavior so essential to order, progress, and peace. The educational use of motion pictures, radio, slides and filmstrips, as well as of the other aids, in the classroom is a means of insuring education against isolation from the stream of world events.

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What is Audio-visual instruction- In a technical sense *audio-visual instruction* is a term used to designate an extensive variety of devices such as moving pictures, slides, transcriptions, the radio, recordings, and slide films which are used by teachers to transmit ideas and experiences through the eye and ear. However, in school practice, the term *audio-visual instruction* has taken on a broader meaning. In addition to the teaching materials listed in the previous sentence audio-visual instruction includes the use of charts, diagrams, field trips, models, exhibits, mock-ups, demonstrations, posters, stereographs, photographs, objects, specimens, blackboard sketches, the bulletin board, et cetera. The chief distinction between audio-visual instruction and other forms of instructional technique is a matter of emphasis. *Audio-visual instruction* emphasizes the value of concrete or non-verbal experience in the learning process, whereas other forms of instruction stress verbal or symbolic experience.

A
Definition

By
F. DEAN McCLUSKY

In, Audio-Visual Teaching Techniques. D u b u q u e : Wm. C. Brown Company. 1949. Pp. 1-2.

The distinction between non-verbal or concrete experience on the one hand and verbal or symbolic experience on the other may be shown in the following example. A child sees a marble for the first time. He looks at it, picks it up, feels it, rolls it around and gives it a thorough examination. He is experiencing a marble by the direct stimulation of his senses. This is a concrete experience. He asks, "what is it?" and *hears* the reply "a marble." The sound "marble" is a verbal symbol. Later he sees marks on a page which spell MARBLE. Again he experiences a verbal symbol, this time through the sense of sight. But neither the *sound* "marble" nor the *sight* of the printed word have any resemblance in form to the object which they represent.

Hence, the meaning which the child derives from the verbal symbols is a function of the associations which he develops between his concrete and verbal experiencing. In fact, the child knows more about the marble from his concrete experience than can be expressed by words. Once the meaning for the word marble has been established the child can use the symbol extensively and the depth of meaning will grow with additional experiences. However, extended verbal experiences may bring him in contact with the word used in sentences such as: "The table has a marble top," or "Marble is used in building, or "He stood like a marble statue." If so, he will find it necessary to extend his concrete experiences accordingly. Otherwise confusion in meaning will result.

In consciousness, memories from past concrete experiences and verbal experiences are closely linked together. They are also blended with incoming experiences to give meaning to an immediate situation. For example, a teacher who is always in the habit of greeting his class on entering the room with a cherry smile and a "good morning," comes in out-of-breath, scowling and gruffly says, "good morning." Even though teacher says the same words, *good morning,* his students are quick to interpret the non-verbal scowl, gruff tone and out-of-breathness to mean that it is not a *good morning* with teacher. This example also illustrates that the understanding of verbal symbols is a function of the pattern in which they are experienced and in addition that there may be strong non-verbal elements in the pattern which condition or even determine the meaning. Have you ever read a verbatim statement of a stirring speech which you have heard? It has been my experience that in the printed version the meaning of many passages, seen in cold type, differs from the original as delivered by the speaker.

Studies of language development show that elementary word and number meanings arise out of sensory experience with objects and things, but later words and numbers are used in a manner which removes them from the concrete. Hence, words and numbers may become highly abstract and complex in use and in meaning. In fact, they may be "abstracted" to the point of being meaningless. Therein lies the disease, known as verbalism, which plagues instruction.

Not long ago I tried an experiment which illustrates the hold which verbalism has on some individuals. I wrote the following statement on a sheet of paper: "It is proposed that a committee be appointed to make a pilot study of permissive experimentalism to determine the dynamics of audio-visual instruction's differentiated philosophies integrated into a democratic society for a united world." I took the statement to an educational convention and showed it to several small groups gathered in discussion between the formal sessions. Some individuals indicated approval. One came to me later and offered to "put-the-motion in the business meeting." Another volunteered to second the motion. A third suggested immediate action so that "our association could get the full credit." Some were non-committal. Others recognized the statement as sheer nonsense and sensed the humor in the situation.

Audio-visual instruction is an antidote for verbalism. By relating the non-verbal experiences of learners to the verbal, teachers can make instruction meaningful. Audio-visual materials are of great value in helping teachers and students develop meanings in common. Properly used they are a preventive of the many misunderstandings which arise out of academic language.   ✿ ✿ ✿

If we examine practice in the schools, we find evidence of a consistently growing emphasis on the use of audio-visual techniques and materials to disseminate information, develop skills, and communicate ideas and attitudes. Most educators and laymen have accepted these newer devices and methods of communication as important tools for teaching and learning. The effectiveness of these new tools is borne out by experimental evidence, and yet if we carefully consider common attitudes toward the audio-visual movement, we begin to see that some doubts are present. What is the source of these doubts, and how do they arise? Do they represent valid criticism, misunderstanding, semantic confusion, or possibly all of these in some degree?

'Visual' and 'Verbal' Paths to Learning

By
KENNETH NORBERG
Teachers College Record.
Vol. 54, No. 6, Mar., 1953.
Pp. 319-323.

First, let us consider a specific case of doubt. There is no need to document the widespread faith in audio-visual methods. Testimonials for the new tools of learning are commonplace. Hence, it is rather surprising when we come across an article by N. Conger entitled "Is There Danger in the Use of Visual Aids?" A brief quotation will suggest what the author has in mind.

"The question may be raised as to whether the use of visual aids has any tendency to reduce reading competency. Does the effectiveness of the pictured presentation rest upon the fact that its comprehension involves little or no mental effort? Different psychologists, including the late E. L. Thorndike, wrote extensively on 'reading as thinking.' Thinking is never a passive process; it is hard work. It is possible that we may be making a mistake in presenting material visually that could be learned through reading with *a little effort.*

"What this query amounts to is: Should everything that can be learned more easily through visual means be taught that way? Or, are there other factors that should be considered besides ease of learning? If so, what criteria should guide one in deciding what should be taught through visual means and what should be taught through other means? Or could the visual form be used in such a way as not to interfere with the process of learning through reading?"[1]

It should be noted that Mr. Conger envisions the use of visual aids as a *possible* threat or deterrent to optimum reading development. He does not say that present reading deficiencies are actually the result of present use of visual aids. "They have not been in general use long enough."[2] But he advises us to consider possible danger from this source. It seems clear that Mr. Conger is concerned about using techniques as an easy *substitute* for reading, thus preventing or deterring the development of reading skills. He mentions other possible dangers in the indiscriminate use of visual materials, but carefully avoids criticizing visual aids as such. He even concedes the probability that proper use of such materials may contribute to reading efficiency.

The implicit assumption upon which visual methods are taken to be a possible threat to reading development is that visual (pictorial) presentations and reading can serve as interchangeable methods of communication. The argument appears to be that reading (and possibly associated intellectual skills) may suffer when an "easier" method of communication is substituted. Perhaps there is danger both in the use of visual aids and in reading when one is used merely as a substitute for the other. But how far is it safe to follow the assumption of interchangeability? Is there any truth in the idea that the "visual" and "verbal" are alternative paths to meaning?[3] Or should we discard altogether the notion that one can be substituted for the other?

Before proceeding farther, however, some attention must be given to terms. There is an inherent difficulty or awkwardness in the general discussion of "visual" and "audio-visual" materials as contrasted with others, because they frequently include verbal components which may occur as either visual or auditory symbols accompanying the iconic[4] signs. Thus, it is difficult to keep distinctions between such terms as "visual aids" and "reading" entirely clear, since both involve visual stimuli and both *may* involve verbal symbols. However, a serviceable distinction may be made if we reserve the use of "visual" and "audio-visual" for materials which are not exclusively verbal, and which involve visual perception of "real" things, or iconic signs resembling in some degree the things they represent. After making this preliminary distinction we must then consider the *extent* to which the meaning of visual or audio-visual materials rests upon their pictorial or iconic elements. In distinguishing visual from verbal ma-

1. N. Conger, "Is There Danger in the Use of Visual Aids?" *School and Society*, Vol. 74, No. 1909, July, 1951. Pp. 38-39.

2. *Ibid.*, p. 39.

3. It is of some interest here that both audio-visual education and the specific medium of television have been attacked as threats to our culture and to reading as a superior (alternative) method of communication.

4. The term "iconic" is borrowed from C. S. Peirce and Charles Morris. The latter uses it to denote signs resembling the things they represent. Thus, iconic signs would include pictures, three-dimensional models, realistic sounds, and so forth.

terials we assume that perception of real things or iconic signs is the distinctive factor.

Returning to the issue already developed, it is true in a crude sense that visual or pictorial methods of presentation are interchangeable with verbal symbols for certain limited purposes of communication, and assuming appropriate circumstances. But to assume (tacitly or otherwise) a general interchangeability is unwarranted. It is also true, obviously, that visual media such as television may compete with reading as alternative claims upon the individual's time or intellectual habits, but this is something quite different from the proposition that visual presentations, as such, may compete in any full sense with reading as an alternative method for communicating the *same* content.

Meanings may be regarded as functions of situations as they develop through time: they do not reside in "real" things, in pictures, or in words taken out of context. In other words, the *situation* is meaningful—not the visual aid or the printed word as such. What a picture or a printed statement "means" at a given time is the meaning of the total situation reflecting the past experience and present concerns of the individual. The meaning may be precipitated by picture or by word, but it is not a property of the precipitating stimulus itself. Moreover, the functional meaning of a situation is unique, a cumulative development, constantly changing in time.

If we approach the problem this way, it follows that the meanings associated with visual presentations and with words develop concurrently as aspects of communication situations in which both are involved. In other words, the singular meaning of a situation, at any moment, may be grasped (or expressed) in either of two ways: (1) as sensory-motor organization of behavior reflecting what we ordinarily call "perception"; (2) as symbolic formulation reflecting the lingual dimension of behavior. But these modes of communication are interrelated and interdependent. They are not self-sufficient and alternative methods. Consider two farmers walking through a field of wheat. One observes something: a patch that is different from the remainder of the field, an unexpected growth of weeds, or some variation in the soil. This is pointed out to the other. They talk, observe more closely, talk some more, move to another part of the field, make further observations, argue, make still more observations, and so on. This pattern of interweaving perception and verbal behavior is one that can be traced in any organized and sustained human activity. In the case of the farmers in the field it is apparent that each new observation is guided and controlled by what has been said or read or is being said (and thought) as the

farmers carry on their tour of inspection. At the same time, the verbal behavior is controlled by what is being observed or has been observed in the past. By saying that perceptional and verbal behavior are concurrent in such situations we mean that there is a constant, reciprocal interplay between the two—a fact that is borne out by everyday experience.

Now if we enlarge our field of observation we note that any particular situation, such as a wheat farm, can also be viewed from the standpoint of the science of horticulture; from the standpoint of contributing sciences such as biology, physics, chemistry; from the standpoints of economics, politics, logic, ethics, philosophy, and so on. It is apparent that these various fields are spheres of inquiry in their own right, and also that they grow out of, and are continually nourished by, the practical concerns of everyday living, such as the farming situation previously mentioned. What is not always equally apparent is that the systematic formulations of the sciences or other fields of human thought, which enter the practical situation frequently as reading of verbal symbols, function in human behavior as they become involved in the development of meaningful situations wherein perception and action are also involved over a period of time. What has been set down in books sometimes seems to have a life and meaning of its own, apart from the context of feelings, thoughts, and concerns brought to it by the reader. Maybe we should remind ourselves that this impression of entirely self-contained meanings in verbal symbols and formulations has no basis in fact. The meanings that develop in situations as we pause to read, to converse, or to reflect are remarkable in that they mark the distinctively human capacity to think in general terms, to abstract and combine ideas, and to apply the meanings developed through past experience in new situations. They are also remarkable in that they demonstrate the human capacity to share experience and communicate ideas. Nevertheless, the meaning that is communicated or precipitated by reading or other verbal behavior at any given time is generated out of a continuum of experience going back in time and including the full range of behavior.

Another common notion (corresponding, perhaps, to the idea that meanings may be "contained" in self-sufficient verbal formulations) is that the meanings of "real" things and pictures are the bedrock of experience and that they develop prior in time to the relatively "abstract" meanings of words. Visually perceived things are assumed to have more or less residual powers as signs, as though their meanings were written on their faces so to speak; whereas the meanings of words, in contrast, are supposed to be derived from association with things or with pictures of things. This notion has an element of truth,

but it is only half true. It is better to begin with things, pictures, and words as events on an equal footing (meaning-wise) and to assume that their functions as signs develop concurrently as aspects of situations unfolding in time. Beyond the testimony of common experience there is abundant evidence in experimental psychology for the suggested point of view.[5] We know, for instance, that verbal cues definitely condition what we make out of a given stimulus-object in perception, suggesting that there is a constant substratum, a conceptual background to the sensory-perceptional organization of experience, and that this substratum or background is, or corresponds to, the way in which the subject would lingually formulate the meaning of a situation at any given time.

Still another common notion associated with the idea that meanings somehow reside in pictures, or in words, taken by themselves is that learning may be attributed to a single (or discrete) presentation, such as a picture or a printed statement. It would be better to say that learning normally occurs during a series of presentations over a period of time. It would be still more precise and meaningful to say that we always learn in the course of a series of experiences, and that this series normally includes such different phases as perception, symbolic behavior (such as reflection and reading), and action. Of course any single phase in the series, such as the symbolic, may become a protracted chain of special events of that order. An Einstein may work for years at the symbolic level perfecting an elaborate theory, but he or some other observer will eventually return to the object to test the theory or put it to work. It should also be noted that learning may occur during the course of isolated visual presentations or isolated verbal behavior, but only in the sense that a potential reorganization of behavior already built up through a preceding series of experiences can now be touched off or precipitated by the discrete stimulus-event in question.

Does this mean that visual perception always involves a background of experience available in the form of symbolic formulation? Does it mean that symbol behavior, such as the reading of words, always presupposes a background or a contest of perceptional experience? The answer, as we have already suggested, is Yes to both questions. In fact, it is proposed that the radical difference sometimes supposed to exist between words and perceptions, in the more limited sense, has no ground in fact. The reading of words *is* perception in the full sense. As such, it is involved in and contributes to the development of other perceptions of "real" things or pictures of things, whereas these latter perceptions (of the sort involved in the use of visual aids) are in-

volved in and contribute, in turn, to the development of that particular kind of perception we call reading.

Modern educational practice points to the increasing use of visual materials, along with actual doing and participation, as a way of providing needed background and stimulus for reading. The *reciprocal* function of reading (and symbolic behavior in general) in the organization and guidance of observation and action will not be obscured, and may even receive fresh emphasis, as we learn to balance and integrate the several kinds of learning experiences. It is suggested that the proper interpretation and development of the modern trend emphasizing the use of "visual" instructional materials is consistent with the view that the visual and verbal paths to meaning are *complementary* phases in the development of the meaningful situation—not alternative paths to learning.

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Not long ago a teacher asked me to list some of the major values in audio-visual instruction. It has occurred to me that you might be interested in my reply. No doubt you will think of other values to add to this list.

1. Audio-visual instruction provides the concrete experiences which are essential to enriched learning. A common fallacious notion in teaching is that the human ability to recall verbalized experience is synonymous with real understanding. It has been demonstrated time and again that a student's verbal expressions are not always reliable evidence of a real thorough understanding.

Values in Audio-Visual Instruction

By
F. DEAN McCLUSKY

In providing the concrete experiences essential in learning, audio-visual materials are valuable, on the associative level of instruction, not only (a) to give meaning to words and to symbols, such as numbers and map signs, but also (b) to clarify ideas involving higher abstractions. An additional value is that (c) audio-visual materials may be used to combat the temptation to over verbalize instruction.

Talk is cheap. Long reading assignments make for meaningless busy work. Class discussions may become wasteful by wandering off the subject or by empty chatter. Audio-visual instruction systematical-

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5. The dynamic and constructive character of perception and meaning is dramatically verified, for instance, by the Ames demonstrations in perception developed by the Institute for Associated Research. (See Franklin P. Kilpatrick, ed., *Human Behavior from the Transactional Point of View*, Institute for Associated Research, Hanover, N. H., 1952.)

ly used serves to offset the tendency to over empha-size the verbal in teaching.

2. Audio-visual materials are of value to the teacher in the accurate communication of ideas. The first step in good instruction is the successful inter-communication of ideas between teacher and pupil. From this point of view, there are three major values which the teacher will find in audio-visual materials when planning and teaching units of instruction.

(a) Pictures, charts, models et cetera particular-ize word and number concepts. A concept needs to be pinned down by examples and illustrations if true understanding is to result. Inasmuch as a concept is a generalization, it is frequently necessary for the sake of preciseness in communication to give an ex-ample or to be specific. Language concepts are sel-dom adequate in giving complicated directions to a traveler. A map, however, will make the instructions specific. Likewise, in giving certain types of assign-ments to students, confusion may be avoided by the use of charts, pictures or diagrams. For example, in laboratory exercises it is common practice to dia-gram the layout of apparatus. As an experiment, try teaching a student how to thread a motion picture machine by language alone. Then give the same instruction with a threading chart in hand. Note the increase in the accuracy of communication between teacher and student when the chart is used. In gen-eral, interest increases when the discussion is cen-tered on an object, a picture or a model.

(b) Audio-visual devices are especially valuable in demonstration teaching. The learner will make progress in the development of behavior patterns when he observes good demonstrations of the pat-terns to be learned. One of the best techniques which a teacher of skills may employ to communi-cate his ideas to students is to demonstrate the skill or furnish a model which can be imitated. How often have you heard a coach say in desperation, "I have told him time after time how to do it but he still does not learn." Students make little progress in developing behavior patterns by being told how or by reading how. They learn to do by doing and by imitating the behavior of others who are skilled. Demonstrations make for accurate communication.

(c) Audio-visual materials "speak" a universal language. They cut across language differences and barriers. Motion pictures in particular are valuable in communicating ideas that are understood univer-sally. Audio-visual aids are a must in Americaniza-tion classes for non-English speaking newcomers to the United States. Experts in many fields are em-ploying visual devices to communicate technical ideas to the lay public. For example, note the popular pub-lications on atomic energy.

3. Audio-visual instruction aids accurate think-ing. Reflective thinking does not take place in a vacuum. A rich storehouse of memories consisting of all kinds of clues is essential to good problem solv-ing. The evidence is that non-verbal as well as verbal clues are used in most thinking. Effective thinking depends upon the ability to combine experiences and to relate them to the problem at hand in such a man-ner as to create a solution of the difficulty. Many times these relationships which give clues to the solu-tion of the problem appear in consciousness in an un-expected manner. The term insight is used to desig-nate this phenomenon. In general, the clue to the solution comes only after considerable mental effort.

Audio-visual instruction contributes to accurate thinking by (a) furnishing some of the basic raw materials for thought. It can fill the storehouse of memory with the non-verbal experiences essential to meaning. (b) Audio-visual techniques are helpful in directing attention. Analytical diagrams, sketches and layouts are useful devices for keeping the atten-tion centered on the problem. Training in the ac-curacy of observation is helpful in keeping the thought from wandering afield. (c) Finally, audio-visual materials may be used to clarify symbolic con-cepts by relating them to concrete situations. A ver-bal "clue" tested in a practical situation may be found not to work or vice versa.

It has been argued that the highest levels of think-ing involve only verbal concepts, but it is now recog-nized by many that thinking "pictorially" or with ob-jects is not only on a high plane of mental activity but is as difficult as that involving verbal imagery. In either case the ability to see relationships is of prime importance.

4. Audio-visual instruction contributes to the de-velopment of attitudes. The power of attitudes in influencing behavior has been clearly demonstrated. Some psychologists and sociologists maintain that an individual's behavior is in large measure determined by his attitudes. Research studies by Young, Hall, Thurston and Smith indicate that in general real life experiences are more effective in modifying attitudes than are verbal experiences such as classroom lectures and discussions.[1]

Audio-visual materials are of value in the develop-ment of desirable attitudes because (a) they may be used to arouse the emotions and feelings. For exam-ple, motion pictures were used successfully during World War II by the Armed Forces to develop atti-tudes, create morale and motivate behavior by using strong emotional presentations. Motion pictures of

1. Stansfeld Sargent. *The Basic Teachings of the Great Psy-chologists,* Philadelphia: The Blakiston Company. 1944. Pp. 286-7.

this type are now called incentive films. Pictures, posters, cartoons and motion pictures were successfully used on the home front to implement the buying of bonds and to support other war measures such as food rationing et cetera. Since the war many incentive films have been made expressly for educational purposes, for example *Boundary Lines.*

A second argument in support of the use of audio-visual materials to develop attitudes is that (b) we believe what we "see." The effect of real experience on the modification of attitudes as demonstrated by research has been cited previously. Verbal techniques are inadequate in sales campaigns involving new processes and new machines. Buyers have to be shown how it works. Agriculturists discovered that the attitudes of farmers relative to new methods could not be changed by "book learning" or the verbal pronouncements of experts. The farmers had to see the new methods demonstrated before they would change. Teachers deal daily with attitudes both positive and negative in their students. There is no better way to develop desirable attitudes than by the audio-visual approach. The non-verbal image has dynamic force.

In conclusion, it is clear that the values in audio-visual instruction apply to the four major types of learning, namely: the development of motor skills, building associations, solving problems and creating attitudes and appreciations. To use audio-visual materials wisely in terms of these values is to teach effectively.

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Two groups of children came to an historical museum and were taken on a tour of exhibits. Both groups underwent what looked like the same experience. But to one group, the experience was rich and rewarding. To the other, the experience had some bright moments but was on the whole intellectually fruitless. How could this happen? What lesson does it teach those teachers deeply concerned about enriching experience through improved methods and materials of instruction?

Rich Experience as Learning Material

BY
EDGAR DALE

One lesson that is clearly illustrated by this museum experience is that the overt physical presence of an object does not mean that it will affect or change the viewer. Physical objects do not educate. It is what they mean that can change our responses to them.

This is such a common-sense statement, so easily proved, that it seems unnecessary to mention it. Yet this principle of communication is violated every day in many classrooms. We see this very clearly with radio or reading materials. A program on Mexico or Germany or Alaska may seem dull to one person. Another person may read or listen to the same material and find it extraordinarily interesting. Why is this so? It is interesting when it carries with it many reminders of his previous experiences. Let me ask which of the following words evoke a rich response from you: Bryce Canyon, Carmel, The Palisades, The Bad Lands, Chartres, Montreal, Buenos Aires, Oberammergau, Niagara Falls. Some evoke rich memories; others leave us cold.

We see at once that it isn't either the object or the symbol that is effective, rather it is what the object or the symbol reminds you of. Every object has a "thing-in-itself" aspect and it acts also as a reminder, a symbol. Indeed, that is what a symbol is, a reminder of something else. The quality of the reminder is a portent of its possibility for real educational use. Rich experiences, in Whitehead's phrase, are "suffused with suggestiveness." Just as real objects themselves do not educate, so direct contact with semiconcrete experiences such as motion pictures, photographers, or 2x2 color slides do not insure an educational experience. Indeed our experiences with the host who trots out the 2x2 color slides he took in Heidelberg or Mexico City or in the North Woods should warn us that semi-concrete experiences may not interest, even let alone educate.

If motion pictures or television, by the mere fact of presenting "experience" to people, could have the dynamic effect that some exponents believe they have, then school or theater motion picture operators ought to have acquired a mine of rich and valuable information. They ought to be extraordinarily wise. Some of them do pick up a great deal of information, but many of them do not. They don't pick it up because either they aren't ready for it or it doesn't meet any of their special needs.

When we realize that the real objects themselves or their easily recognized counterparts in photographs may not evoke rich meaning, we see highlighted the problem of teaching reading successfully. If an object or a picture of an object does not remind us of very much, how less does a verbal symbol of that object or experience remind us of its meaning in reading. The child must be able not only to say the words but to "see" what they mean. If we sometimes get a little discouraged about our progress in this field, let us take heart by noting what the situation was like "in the good old days of 1838." Here is what Horace Mann, Secretary to the Massachusetts Board of Education, said in his 1838 report:

"I have devoted special pains to learn, with some degree of numerical accuracy, how far the reading,

in our schools, is an exercise of the mind in thinking and feeling, and how far it is a barren action of the organs of speech upon the atmosphere. The result is that more than 11/12th of all the children in the reading classes in our schools do not understand the meaning of the words they read, that they do not master the sense of the reading lesson, and that the ideas and feelings intended by the author to be conveyed to, and excited in, the reader's mind, still rest in the author's intention, never having yet reached the place of their destination."

A friend of mine, in evaluating materials intended for national use, often asks quizzically, "What will this mean to Olathe, Kansas?" I assume, there being no evidence to the contrary, that Olathians are typical Americans who would have the same experiences as people in any state in the United States. One asks, therefore, of all educational materials whether they remind pupils everywhere of somewhat the same things. We must remember, of course, that Olathians live in Kansas, Cantabrigians in Cambridge, and Texans in Texas.

A striking example of how experiences that overtly look alike can mean such different things is illustrated by the recent Gold Coast elections, whereby a former British dependency is becoming a new African nation. Margery Perham describes it thus in the July issue of *Foreign Affairs*. "To white men who have made their home in the African continent the shock has come as a perhaps only half-formulated question: 'Is this the beginning of the end for us?' And every African who has heard the news— a number no one can exactly estimate—has felt a thrill of joy, and of the sudden, incredulous hope: 'Is this the beginning for us?'"

The simple point needs to be made again and again that meaning depends not only upon the objective sense experiences but also upon purpose. Indeed, the two are interdependent. One class which visited the museum had no strings upon which to put these new beads of experiences. They had no problem to solve, no questions to answer, no systematically planned exploration of which this experience was a single expedition.

It is quite true that some of the experiences at the museum may have had a richness arising from their very sense quality. There may be a certain residue because of the poignancy, the sharpness, and the vigor of the experiences. But experiences do not stick with us very long unless they are tied to purpose and unless these purposes in turn are geared into some kind of systematic organization. A motion picture producer once said to a writer, "You have many pearls here, but they aren't strung."

Here, of course, we are presented with a dilemma. We cannot take on new experiences, even learn what they mean, until we have a framework, a skeleton on which to hang them. And we cannot have this framework until we have had certain experiences. How can we solve this problem?

First of all, these are statements of extremes. We can, it is true, in educational work emphasize the texture of an experience, its richness, its vivid quality. But no experience is atomistic. It tends to develop into some kind of system or classification. Indeed, it cannot be an experience unless it has something old as well as new about it. Texture moves into architecture and influences the quality of later experiences.

We may conclude, therefore, that rich sense experiences are necessary but that excitement is not education. It is only as these rich experiences are tied to purposes and as these purposes become further systematized that they become ready for later use.

This is one reason why we have subjects and subject matter in the school. Subjects are not the Machiavellian invention of a schoolmaster. Arithmetic does have a hierarchy of generalizations which are built one upon the other. However, the mature, adult quality of that systemization offers many obstacles when we try to make the adult logic of arithmetic fit the psychology of children.

Some children, it is true, may catch on to the system, but others have great difficulties. When arithmetic meets the needs and purposes of children, it becomes qualitatively ready to become educationally fruitful, namely, to lead to other generalizations. Children can, of course, be helped to make these generalizations. We do not expect them to re-invent the Arabic system of numbers. The joy that comes with the discovery of the system and logic of arithmetic is in itself a fruitful learning product. It is a happy day indeed when a boy or girl realizes that you can keep right on counting, that there isn't any end, in other words, that there is a system to this counting business.

Boys and girls do not need to re-invent the Arabic system of numbers, but they must rediscover it. More than one boy or girl has had trouble with mathematics because it didn't make sense to him. It had no inner coherence and meaning, no system. He went through algebra, but algebra didn't go through him.

This does not mean that it is relatively simple to secure rich experiences and then to systematize them. The individual child does not come purposeless to the school or class. He may come, however, with purposes which run counter to the learning needs of the classroom. These iron curtains of indifference, prejudice, anxiety are not easily lifted. But

the wise teacher skilled in the needs and purposes of children and young people often knows how to surmount these barriers.

The following story shows that these barriers are sometimes higher than we may realize. A boy who had previously taken no interest in school perked up when he had an opportunity to work on the school FM radio station. The instructor then tried to interest him further in electronics and thought for a while that the boy was changing his educational interests. One day the boy said to the instructor, "You know, I don't think I am going into electricity. I have changed my mind. I want to be a teacher." My friend, elated at the progress he had seemingly made in changing the unfriendly attitude of the student, said, "Why do you want to teach?" "Well," replied the boy, "I would like to see a lot of kids suffer as much as I have suffered."

Rich experiences, in order to be educationally fruitful, must have two characteristics. Sometimes, not always, they need to have a sense quality. We can savor their "presentism," their texture. They can thus be enjoyed as ends. But the very richness of such experiences leaves an intellectual and emotional residue. Richness can be further secured by placing these experiences in a wider context by systematizing them. Education, after all, is nothing more than putting today's experiences into a more meaningful context, by reweaving them into generalizations and systems of generalizations.

We return to the two classes which went to the museum. One class, which planned its trip, had both the rich experiences of the day and the rich residue as well. The other class, having no questions to answer, no purposes to be met, had little residue of systematic learning. The rich experiences of today did not become the fruitful generalizations of tomorrow.

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Audio-visual materials are valuable in the successful teaching of practically every subject and at all levels of instruction. The use of the concrete and realistic have been prominent in the educational systems developed by many great educators.

1. Comenius, in the seventeenth century, advocated learning from the world; he also made use of illustrations to visualize subject matter in his Orbis Pictus.

The Psychological Basis

By
F. DEAN McCLUSKY

2. In the eighteenth century, Pestalozzi used the school journey or field trip for observation, and object material for sensory experience.

3. In the nineteenth century, Froebel stressed sensory instruction particularly that through sight and touch.

4. The modern twentieth century idea propounded by Dewey of making the school more than a preparation for life by actual living has again brought visual instruction into prominence.

It is clear that these educational leaders stressed the relation of sensory experience to the learning process. We shall now show how the fundamental pedagogical principles may be applied to teaching through the use of audio-visual materials.

Self-Activity

1. Froebel, we recall, stressed that important principle of teaching known as *self-activity*. This law may be stated briefly as follows: children learn through their own experiences and responses. In application, this means that we learn to skate by skating, we memorize poetry by memorizing it ourselves, we learn to spell by spelling. If children are to make effective progress in learning, they must be kept actively at work. The materials with which they work must be stimulating and should hold the attention and interest.

a. Instructional materials such as photographs, lantern slides, stereographs, exhibits, motion pictures, and the like may be used in arousing the mental activity of children. In schools where pupil activity is stressed, one will find audio-visual materials in abundance. For example, at a large educational convention held in New York City, the exhibits of work from the several schools were characterized by the widespread use of visual aids. The exhibit hall in the Metropolitan Museum of Art was a sea of all types of visual materials. The child-made maps ranged in area from one hundred sixty square feet to two and a half square feet; one fourth grade sent its own "moving picture" of transportation on the Hudson; photographs of pageants, of apparatus, of dramatizations, and activities, were to be found; collections; scrapbooks; child-made story books; models; paintings; sketches; charts; graphs; clay-models; cut outs; and picturizations of rhythm and tone quality in music were on display. As one passed from exhibit to exhibit, one was impressed by the amount of activity represented therein and by the number of subjects to which visual aids had been applied in teaching.

b. Not only did this convention demonstrate the fact that pupil activity is an important aspect of modern teaching and that audio-visual materials are widely used in modern schools, but it also illustrated the value of visual materials when used to tie together or correlate subject matter and activities.

c. History, shop work and art; geography and hand work; music, history and English composition

were found to be knit into one teaching unit through the medium of visual materials.

Take, by way of illustration, the use of the correlation idea in a study of transportation in a seventh grade history class. The class began its exploration through reading, first in its text book and then in references. It decided to express the results in a pageant in miniature. The history, art and shop teachers combined efforts, with the result that the shop and art periods were devoted to constructing a pageant of transportation.

The models were designed in the shop and were made there. So was the stand upon which the models were to be mounted. The art periods were used to paint and dress the models according to the period of time represented. Facts about costumes and the size and shape of models were obtained through reading, from photographs, wood cuts, paintings and by seeing actual models in the museums. English compositions on transportation were written and illustrated by the students. They wrote a play of one act based on their study. An original bit of verse was set to an original tune. Pupil activity was the predominating note and the visualization of their studies in the miniature pageant tied together the work of this seventh grade in history, shop, art, music, and English composition.

d. The value of visual materials in stimulating pupil activity is illustrated further by the class use of the slide as a basis for the socialized lesson or the use of the stereograph as a basis for intensive individual study.

In the socialized group lesson, a slide is projected on the screen and held there while the teacher and the class discuss and analyze the picture. This gives all a common basis for discussion.

The slide may be used with the group to preview the unit and to stimulate their interest, or as assimilative material during the intensive study of the topic or as a rapid fire group review at the end.

Experience has shown that the use of a few slides is far better than the use of many, for a large number of slides tends to lull students into a passive frame of mind, whereas the analysis by the group of a few pat pictures arouses a higher degree of pupil activity. The principle of self-activity is carried even further by teachers who have pupils make their own slides.

e. Individualized experience of a high order is obtained by the use of apparatus, the microscope, and tape recorders. The possibilities of arousing a maximum of mental activity through such devices are obvious.

Thus, we find that the application in school practice of that important principle of teaching known

as the principle of self-activity shows audio-visual materials to be of recognized value. If a teacher is concerned about the kind of materials and devices to use in arousing pupil activity, she should turn to the materials of audio-visual instruction for help.

Apperception

2. A second major principle of teaching is the principle of *apperception* — that learning is conditioned by past experience and one's present frame of mind. Effective learning can best be accomplished when the new is linked with the old, for new impressions are interpreted by past experiences.

Learning is also influenced by the mind set. One's immediate response is determined by what one is thinking about at the time stimulus to response occurs. Primitive people seeing an areoplane for the first time call it a bird because they have experienced birds, but not machines that move through the air. We have all had the disconcerting experience of misreading a word or sentence due to influence of thoughts which were not connected with the idea expressed by the words being read.

Audio-visual materials are valuable in building a common background of class experience and in creating a proper frame of mind for the lesson.

a. Burton[1] reports the experience of a teacher who had difficulty explaining that water is not entirely covered with ice in the Artic regions, because when water moves or flows there may be found open lanes sometimes called leads. It was difficult for the children to comprehend such conditions in artic weather. Then one of the class observed that in the brook which was near the school, there was ice along the sides of the brook, but in the middle, there was running open water. He reported this fact to the class and the meaning of "lead" was clarified. Had the teacher started her discussion of this topic by showing pictures of these open lanes or "leads" in the ice or had she taken the children out to see the brook beforehand, a "lead" could have been more easily explained to the class.

b. A Sixth Grade teacher was confronted with a difficult problem in arithmetic which involved postage and postal methods. No one in the class seemed to be able to solve the problem until the teacher found that the difficulty was the use of the word "cancel" in the problem. The children did not know what it meant to "cancel stamps." After he explained with the aid of letters and pictures, the process of cancelling stamps, the children were able to solve the problem.

c. Visual materials can be used to provide new experience or to correct former wrong impressions.

1. William H. Burton, *The Nature and Direction of Learning*. New York: D. Appleton and Co., 1929.

Children who have never seen the South Sea Islands, or the Arctic regions, or tall mountains, or big oceans, can experience them through moving and still pictures.

(a) New experiences are to be had through visual materials which will serve as a background for the development of lessons in areas where students have had little or no previous experience. Many teachers have found it advisable and effective to use slides or motion pictures to introduce a lesson or topic. If a particularly engaging picture is used, the children will have their interest aroused in the topic and will be in the proper frame of mind for the continuance of the lesson.

In much of the project work which has been reported, it is interesting to note the way in which the project started. The children see an object or picture, it arouses their interest, they ask questions, and the project is begun.

(b) In using visual materials, it is important because of the principle of apperception, that objects be shown in proper size relationships.

William Gregory, formerly head of the Cleveland Educational Museum, tells of going into a classroom and asking the children some questions about corn, a topic which they had just been studying. He asked one child to tell him the size of an ear of corn. To his astonishment, the child said, "About as tall as you are." On checking with the teacher, he found that the child's misconception of the size of an ear of corn was due to the fact that the chart which the class used had pictured the ear of corn to be as tall as Mr. Gregory. The teacher had made the mistake of not relating the size of an ear of corn to other objects in the room.

The writer recalls an experience with motion pictures. He was using a film entitled "The Monarch Butterfly" in which the chrysalis and larva of the monarch butterfly were shown in a close up. It was not until some months later when he saw a chrysalis and larva for the first time that he discovered the actual size of the two objects. It came as a shock, because his notion of the objects as gained originally from the films, made them several times as large. Therefore, in using visual materials to build up an apperceptive background, the teacher must be very careful to avoid giving erroneous impressions through pictures.

INTEREST

3. A third important principle of teaching is the doctrine of *interest*. The most effective learning takes place when the learner is interested or wants to learn. We all know the old saying: You can lead a horse to water, but you cannot make him drink.

One may expose a child, but one cannot make him learn unless he is really interested and wants to learn.

Children out of curiosity like to look at new pictures, stereographs, slides, exhibits, objects, apparatus, charts, and motion pictures. For this reason, audio-visual materials have been used widely as interest-arousing devices in teaching.

a. Interest may arise from innate drives or from environmental experiences. It is an innate tendency to be curious, to manipulate objects, to collect objects, to seek social approval, to like adventure and romance, to be attracted to the actions of people and animals, to be afraid, to maintain life, to repeat satisfying experiences, and to seek security. Teachers, in harnessing these innate drives, have found that audio-visual materials may be used to great advantage. For example, children are curious, they like to look at strange scenes and new objects. If it is new, it is intriguing. In initiating a unit of study, the interest of children may be aroused by showing them strange objects or pictures which apply to the unit. The geography class, for example, is studying Japan. Sandals worn by the Japanese, Japanese head dress, pictures of Japanese life will arouse the curiosity of the class and from that, an interest can be developed in the geography of Japan. The study of the geography of Japan may be motivated further by having the children collect pictures of Japan and paste them in scrap books. A motion picture story of an adventure in Japan or of a Japanese romance and motion pictures showing the strange movements of Japanese children at work and at play due to their own peculiar methods of doing things would stimulate further interest.

b. In fact, audio-visual materials are so effective in arousing interest that many teachers make the mistake of over stimulating the class and of turning the lesson into a sort of desultory entertainment. This can be avoided by making use of a few carefully selected pictures or objects. Exposing children to a flood of new concrete experiences serves only to confuse and to scatter their attention. This warning applies especially to the use of motion pictures, large sets of slides, and to school journeys. The attention of children should be concentrated upon a unit of work which leads to its mastery. Audio-visual materials should be used to that end. They should serve to clarify ideas and stimulate attention.

SIMULTANEOUS LEARNINGS

4. When the learner is engaged in learning in any situation, he is not only learning the lesson at hand, but is also developing many additional ideas and attitudes at the same time. This principle is known as the principle of *concomitant* or *simultane-*

ous learnings. If, for example, the student is studying algebra, he is learning how to write a new symbolic language, he is learning how to be honest intellectually, learning how to be neat and is learning an appreciation of the value of advanced types of mathematics. (At least, that is what teachers of mathematics hope to accomplish.)

In like fashion, when a person is learning to play football, he is learning sportsmanship, team play, how to think and act quickly, how to take physical punishment and to give it. Character education goes hand in hand with other learnings. In many types of learning and in many learning situations, audio-visual aids have been found to be effective when used to tie together the aggregate of these simultaneous learnings. Also such materials may be effective in bringing to the mind of the learner by emphasis, one or more particular simultaneous learnings that are the goals of the teacher. For example, the teacher may display neatly prepared papers to the class to serve as an example for others to follow. Perhaps the most effective aid for emphasizing the by-products of learning is the motion picture in which by means of a picturized story the more important character lessons to be learned; such as honesty, good sportsmanship, fair play, and team work are stressed.

INDIVIDUAL DIFFERENCES

5. The principle of *individual differences* has become one of the most widely discussed and practiced ideas that has come into education in the past fifty years. While human beings are alike in many respects yet they are all different. Individual capacities for learning differ enormously. Some individuals are more facile in using language than are others. Some are what we call language-minded, some are what we call sensory-minded. Some seem to see relationships more clearly than others. For those who recognize spatial relationships or who are sensitive to color in its finer qualities or combinations, you may expect an interest in art. Obviously, the objects and materials which are presented by the teacher to individuals in the classroom should be such as to enable each learner to proceed most effectively in terms of his capacities. They may also be used to determine his abilities and previous experiences. The reactions of children to objects and other audio-visual materials are often more revealing to the intelligent teacher than is their speech.

a. In the past, education has attempted to make all students jump through the same hoops and over the same hurdles. Now that a large variety of materials are available for class work, teachers can organize learning situations in an unending variety of patterns which will appeal to each and every individual. If a group is working on a project, gaps in the background of individuals may be filled in by use of audio-visual materials, thus giving a common class background upon which to build.

b. There is a notion, substantiated in part by experience and by some research, that the generous use of audio-visual materials in classes tends to reduce the number of school failures. Brighter students seem to excel in understanding abstractions, while these same ideas have to be made concrete for the slower pupils. Of course, in the distinction which we have given here between brighter and slower pupils, we refer to the most common distinction which is mainly a difference in the facility of the use of language. Audio-visual materials are helpful in making language abstractions concrete and open up a new avenue of approach in teaching students who seem to be unable to learn quickly with abstract or verbal images.

THE GESTALT PRINCIPLE

6. The Gestalt psychology is supported by experimentation in which the experiments dealt, for the most part, with concrete sensory materials. Out of this research has come the rather clean-cut notion that the human mind grasps all of its learning situations in pattern form, then analyzes out of the pattern, by going back for further study, the elements which constitute the pattern, each time re-arranging the pattern with reference to the elements which are being studied. The significance of this point of view cannot be overlooked. The presentation of subject matter should be in terms of a unified pattern in which concrete images, as well as verbal or symbolic images, play their part.

GENERAL ASPECTS OF LEARNING

Many of the general aspects of learning, such as imitation, the accuracy of observation, analysis, synthesis, and generalization may be effectively provided for if the teacher makes intelligent use of audio-visual materials. All students know how important it is to train learners in accurate, analytical observation. The mere exposure of children to pictures, or to objects, or scenes is not enough. A child must be taught how to look and how to observe and how to study objective materials. The world about us is full of truth, if we have eyes to see and ears to hear. The preparation of a class for a field journey by means of pictures, diagrams, charts, and some notion of what to look for will help children in developing and in directing their observations.

1. Children do much of their learning by copying the acts of those about them. In the application of this principle of teaching, it is important that children be given a correct model to imitate. Here

audio-visual materials may be used to a distinct advantage. Perhaps one of the most outstanding examples of this is the use that has been made recently of the slow motion picture to demonstrate and to teach correct form in tennis, golf, swimming, and many other sports. Modern manuals of direction are filled with charts, pictures, or diagrams to show the learner how to do things correctly. Few adults or children can learn how to do a complex act from written or spoken direction. They must see it done or must study a series of pictures or diagrams. It is through imitation that many learners best acquire the notion of how and what to do.

2. Psychological experimentation has shown clearly that we cannot trust a fleeting experience nor the report of an individual upon a fleeting experience. Most of such reports are not only misleading, but inaccurate to a surprising degree. Line drawings, charts, graphs, diagrams are helpful to learners who are making an analysis of concrete experiences. Friquently, it is found that a line drawing is much more effective to teach an idea than is a photograph of the same situation.

3. Children should be taught to practice the analytic method as applied to scenes, photographs, and motion pictures, as well as in learning a verbal situation. This kind of practice is likely to result in more accurate reporting and to develop a higher type of intellectual honesty which is basic for good thinking.

4. After the varied series of experiences in connection with learning a unit, it is the task of the teacher to help the student to synthesize his experiences and to summarize the material for his own use. Diagrams or panoramic photographs or charts or motion pictures are particularly adapted to this function and may be helpful in teaching the student to summarize his materials and present the summarization in an effective manner.

Summary floor talks with slides have been found to be of value. These devices help the student to gain a bird's eye view of what he has been studying and thereby to bring out the true values in the unit of work. Many students are so constituted that a diagrammatic method of summarization is their best means of expression and for such students, the teacher should teach them how to make an effective presentation in summarizing their work.

5. Judd has called attention to the importance of generalization as an aim of instruction. In fact, the ability of the individual to see identical elements in apparently totally different situations, particularly as these situations are presented in objects and concrete forms, is said by many psychologists to be the highest type of intellectual activity. Generalizations involving language ideas are frequently faulty be-cause of the tremendous flexibility of meanings accompanying language.

Students can be taught to check their language generalizations by means of charts and diagrams or by learning to generalize from more concrete situations before attempting the more advanced type of intellectual generalization to language patterns. (See Grabbe, *We Call It Human Nature*. Harpers, 1940.) Edith Parker's method of teaching geography with pictures is an example of the application of this notion to actual classroom procedure. After teaching a topic or unit in geography using many pictures and illustrations, a new set of pictures illustrating the same principles is presented to the students and they are asked to point out in the pictures the similarities between the new pictures and the old in terms of basic geographic principles. This leads to a final test in which new uncaptioned pictures are given the children and they are asked to place them on maps. Visual aids are the basis of her procedure.

Audio-visual aids may be used to create situations differing from the ones that have been studied in order to give the student practice in making generalizations and in transferring the basic principles from one situation to another. This is one area in teaching in which audio-visual materials have been used too little and much needs to be done in training teachers how to teach generalizations based on concrete situations.

TYPES OF LEARNING

There are four main types of learning as distinguished by the psychologial processes involved.

1. *Sensory-motor*. This type is characterized by the development of skilled muscular coordinations. For example, the learning of golf, dancing, tennis, football, swimming, typewriting, handwriting, the pronounciation of a foreign language, the manipulation of aapparatus, et cetera. Sensory-motor learning is closely related to audio-visual instruction, for the basic approach to teaching motor coordinations is visual-sensory in nature. One learns to swim by swimming, and so forth. Here, learning to do by doing is obvious. In developing motor coordinations, the following principles apply:

a. *Keep the attention centered on the objective to be attained.* To help the learner in this respect, targets and similar visual devices are frequently used. Two examples: many successful bowlers have learned to pick a spot on the alley near the point of delivery and bowl to it. A spot close at hand is easy to see and the chance for distraction is reduced to a minimum. This is called spot bowling. A tennis champion learned to serve accurately by placing

twelve squares of cloth in the service courts. He practiced serving to the spots until he could hit them with regularity.

Many skilled performers show "temperament" when incidents occur which distract their attention from the objective. These distractions are generally of sensory origin, such as sounds heard, objects seen and movements observed. In many competitive sports, movements and sounds, as well as words, are used to distract players to "get their goat." The principle of *centering attention on the objective* applies at all levels and stages of sensory-motor learning from the beginner to the advanced performer. Other things being equal, the champion is the one who is most successful in controlling his attention.

b. *Imitate a good model.* The best way for a beginner to learn to act with skill is to watch and then imitate a trained performer. If the teacher is not a good model himself, then it is his duty to provide models for the learner to observe. Observing a skilled performer is in itself a visual approach to learning the act. If good models are not available, then motion pictures of trained individuals performing may be shown the learner. Slow motion pictures are valuable in that the learner may observe acts in which the movements are too fast to be observed normally.

In learning how to speak a foreign language or to improve one's oral expression or to sing, it has been found that recordings furnish good models for the learner to imitate. Audio-visual materials are indispensable to the teacher who applies the "good model" principle to sensory-motor learning.

c. *Verbal instruction is of little value in the early stages, but may be helpful later in correcting errors.* Many teachers and coaches make the mistake of depending too much on verbal instruction in teaching acts which are on the sensory-motor level, because the ideas expressed serve to distract the learner by being too detailed and too involved. I once observed a swimming class in a large university which was being taught the breast stroke. The class was kept standing in the water while the instructor lectured on how to do the breast stroke for 27 minutes by my stop watch. Not once during the lecture was a model used, nor were there any demonstrations. The verbal instruction should be of a nature to encourage the learner, to help him center attention on the objective and to correct errors as learning progresses by directing the learner's observation to parts of the total act as it is demonstrated by the model.

d. *Practice in situations which are like those in which the act is to be used.* The Armed Services made excellent use of this principle during World War II. In training, the green combat troops were taught in situations which simulated actual combat, even to live ammunition and the din of battle. Every type of audio-visual-sensory device was used to condition the soldier for the "real thing."

One learns to swim in water — not out of it. A good football coach requires his players to practice in frequent scrimmages. Tennis players develop their game by practicing against opposition. A basketball player learns how to shoot baskets in a game by practicing against opponents. The Gestalt psychologists have demonstrated that the total pattern of an act includes the surrounding of a audio-visual-sensory nature in which the act is performed.

e. *Progress in sensory-motor learning is characterized by periods of success and of regression.* This fact is demonstrated by graphs which picture the statistical evidence of a learner's progress. Many teachers use graphs to show the learner how he is progressing and to encourage him to further practice.

f. *Good form is essential, but varies with individuals.* Slow motion picture analyses of skilled performers show that their techniques vary. Developing "good form" consists of determining the most effective way for a given individual to perform an act. It is a mistake for a teacher to insist that there is only one way to learn or that there is only *one* acceptable form. Hence, learners should be given an opportunity to observe more than one model.

g. *Progress is made more rapidly when practice periods are interspersed with rest periods.* This principle has been demonstrated by experimental and statistical studies of sensory-motor learning. Graphs showing the results of such studies are valuable in gaining the cooperation of learners in carrying out a systematic program of practice.

h. *When a learner can see or hear himself performing, his progress will be accelerated, if he is under the direction of a good teacher.* The devices used for this purpose are motion pictures, recordings, and mirrors. All teachers have experienced the futility of trying to *tell* certain learners how to perform. Motion pictures of the learner enable him to see for himself where he has succeeded and made mistakes. Slow-motion picture records of games are now systematically used by coaches in "big time" football for the purpose of instruction. Speech, language, and music teachers are using recordings successful to demonstrate to the learner how his performance sounds. Mirrors are used by teachers of voice, dramatics, and dance and speech to enable the learner to watch himself while performing. The problem of expense is the greatest obstacle to the extensive use of audio-visual aids in applying the principle stated above.

BUILDING ASSOCIATIONS

2. *Associative.* This type of learning is characterized by the establishment of associations between symbols and meanings. In other words, it includes all school studies which involve memorization. Learning the vocabulary of a foreign language, memorizing poetry, learning the rules of grammar and the laws of science, associating names with faces, memorizing dates and spelling words are examples. We shall consider briefly the principles which apply to associative learning and show wherein they are related to audio-visual instruction.

a. *The principle of frequency.* In building associations, that which is repeated or experienced many times tends to remain in memory and may be more easily recalled. If audio-visual materials are used in an informational type of instruction, one look or one hearing is not enough. Despite the fact that research shows that students remember more of the information presented by a film than by common verbal methods, one should not interpret this to mean that one showing of a film is sufficent. Students "learn" more and more from additional presentations of an informational film. The same is true of other audio-visual experiences.

b. *The principle of use.* Associations of symbols and meanings are strengthened if the words or numbers to be learned are put to use in a purposeful situation. In learning the vocabulary of a foreign language and in learning to read, the associations are strengthened by using newly "learned" words in objective situations. The same rule applies to sensory experiences. To look at objects is a beginning, but when one uses them for a purpose, the objects take on a richer significance. Likewise, the ideas gained from looking at pictures, films, slides and charts should be employed in interesting activities. Good informational instruction does not stop with the mere exposure of the learner to verbal or objective ideas for memories fade when not put to use.

c. *The principle of recency.* Other things being equal, the more recent an experience, the more readily it can be recalled. One advantage of audio-visual materials is that they can be held or displayed before the class while discussion is taking place. Thus, the subject of the lesson is an attention holding relationship to the class as a whole. For example, a projected picture maintains its "recency" position while it is held on the screen. Obviously, audio-visual experiences, as well as verbal experiences, should be discussed and used as soon as possible after exposure if full benefit is to be gained from the information presented. Otherwise, more "recent" experiences will intervene and distract attention. This explains why the immediate follow-up of an audio-visual presentation is important.

d. *The principle of vividness.* An association is strengthened if it is accompanied by a strong emotional response. Audio-visual materials are particularly adapted to strong, vivid presentations. In fact, there is a danger in over-stimulating students if a succession of vivid presentations is used.

PROBLEM SOLVING

3. *Reflective Thinking.* This type of learning, which is involved in problem solving, is characterized by a felt difficulty, suggestions for solution, testing out the suggestions, and resolving the difficulty by arriving at a conclusion. Solving problems in mathematics, science and the social studies requires reflective thinking. Symbolic and concrete sensory imagery are both employed in problem solving. Some individuals are more adept than others in using concrete imagery in reflective thinking and some use symbolic imagery with facility. The former make good artists, engineers and mechanics, while the later excel in mathematics and in science. Regardless of type, the mental processes involved are on a high level.

Fertility of suggestion is essential to successful problem solving. The associations which the mind brings to play on the difficulty must arise out of a rich background of experience. Audio-visual materials are valuable in this respect, for to be able to reason, one must have something to reason with. Furthermore, words and numbers have a way of leading the thinker into blind alleys. Related concrete sensory experience helps the student keep to the problem at hand. Many find it profitable to sketch or diagram the problem in order to clarify word meanings.

Many types of problems require the use of objective non-verbal materials in testing hypotheses and in applying conclusions. Students should be trained to transfer theory into practice — to make applications from the world of words to the world of things and of action. Audio-visual aids afford the teacher an excellent opportunity to achieve this kind of teaching.

DEVELOPING APPRECIATION

4. *Appreciative Learning.* The fourth of the general types of learning is that involved in developing appreciations and attitudes. Appreciative learning is largely emotional in nature. Learning to appreciate art, music and literature are examples. Play activities are, in the main, on this level.

Dramatizations, recordings, motion pictures, slides, and the radio have proved their worth in teaching attitudes and appreciations. The Armed Services

used teaching aids with exceptional success in developing desired emotional responses.

In all play activities, audio-visual materials are basic, except play which is on the purely abstract intellectual level. Some so-called appreciative teaching has been verbalized to the extent that the objective is lost from view and undesirable attitudes result. Children should be trained to enjoy art, music, literature and play — not to intellectualize them to the point of absurdity. The audio-visual approach serves to balance the temptation to over-analyze such experiences.

In closing, attention should be called to the notion that there is a danger of soft pedagogy and of suppressing the development of imagination if audio-visual materials are unwisely used. This is based on the belief that students should be forced to think through or to see the relationship between symbolic imagery and concrete imagery and that if concrete imagery is presented to them along with the symbolic, that they are robbed of one of the most valuable experiences in learning.

Must we sacrifice speed in understanding, facility in putting our understandings into practice in order to go through the process of re-discovering the idea? Rather, it seems clear that by teaching children to take an active mental attitude toward audio-visual materials that the imagination will be supplied with more ideas and more fertility of suggestion and will be stimulated rather than suppressed.

In conclusion, this discussion of the psychology of audio-visual instruction shows that there is a sound basis for the generous use of audio-visual materials in modern schools.   . ✪ ✪ ✪

What Are YOUR Answers to These Questions?

1. What is a REAL experience?

2. Is a picture a symbol?

3. Is a graph "verbal" or "non-verbal"?

4. Where does one draw a line between verbal and non-verbal experience?

5. What is a teaching aid?

6. How does accurate perception contribute to meaning?

7. Is there a more appropriate term than audio-visual?

Audio-visual aids are more and more heralded as one of the chief contributions of modern times to education. Their specific benefits are apparent to every teacher who wishes to vitalize her classroom work. They capture interest, arouse enthusiasm, make materials live, spur action. They often throw on dull, abstract and unintelligible material a new light that makes it clear and comprehensible.

Audio-Visual Versus Verbal Teaching, The Latter Still Has Its Place

By
VERONICA TRIMBLE KUHNLE

I am in full sympathy with the use of any materials that help to make the learning process easier or pleasanter. I have used audio-visual materials many times and have become convinced of their particular effectiveness. My sole purpose now is to sound a note of warning, a caution against those whom I believe to be overzealously devoted to visual aids.

Propagandists for audio-visual aids tell us that what we see and hear is the core of our life experiences. We like, and are convinced by, what our eyes and our ears tell us. Therefore, many of us spend most of our leisure time listening to the radio or going to the movies. In the words of a leader at a recent audio-visual conference held in Berkeley, Calif.: "Education should improve the things that people are going to do anyhow."

VERBAL TEACHING NEEDED

Without deciding whether or not pupils in later life will be asked to do things they don't want to do or would do "anyhow," let's raise the question: *Will not the pupil have to face life experiences that are dull and lifeless? Are there not times when the verbal is more valuable for teaching life adjustments than is the audio-visual?*

What the protagonists of the audio-visual call "the emotional impacts that affect behavior, that in turn produce the only true learning" are often not only a hindrance but a positive deterrent to the things that pupils will have to do after they leave school. The most universal of these adult experiences, in my opinion, have to do with understanding the income tax and sample ballot. And along with these must be mentioned the rules and regulations, as well as the numerous directives, of our armed forces.

These last named were painfully important during the war and, so long as universal military training is a live issue, they will continue to be important. Furthermore, bulletin boards of government bureaus and corporation departments impose upon their employes

a tremendous and steadily increasing responsibility for digesting directions that are dull, abstract and sometimes even ambiguous in language.

Recently, at an audio-visual conference, in sounding my note of caution, I ventured to say that I had talked with the personnel manager of one of our major railroads. I had asked how our pupils had done in their summer employment. She replied that, while in general they had done as well on the job as regular employes and in some ways better, showing greater quickness and alertness, they were woefully deficient when it came to *reading accurately directions given to them on the daily bulletin board.*

"Have you ever tried to reduce railroad rules and regulations to a form that would catch the eye or ear?" One audio-visual enthusiast answered me with supreme confidence: "Then the railroad should change its directions so that they can be easily understood."

I persisted: "Well, then, how about the income tax forms? We hope that our pupils won't be paupers and that they'll have to fill out their forms." Can anyone deny that these are notoriously long-winded, abstract and difficult to comprehend?

Well, our audio-visual enthusiast had an answer for this, too . "No one can understand an income tax form." I struck back for a third time before going "out": "What about our sample ballots? Are there ever pictures and sound effects accompanying the explanations of measures to be voted upon? Is any material ever any duller?"

Still my sparring partner defended herself: "Well, if a person can't read about the amendments and know what they're for, he shouldn't vote."

The long and short of all this is that whether they like it or not, whether they are equipped to do it or not, practically all of our pupils in future years will have to read the rules and regulations governing their employment, make out their income tax forms or government reports, read their sample ballots. And I haven't mentioned the sales contract!

MUST LEARN TO GRASP THE ABSTRACT

Success or failure in doing these things may decide whether they can hold a job, become leaders, avoid penalties and, last and most important, by voting intelligently, make democracy work. If the goal of modern education is to prepare for life, then, in my judgment, education will have to retain a place for the dull, dry textbook material as a means for enabling pupils in future years to grasp the abstract idea that *still has its big place in modern life.*

We can't remold the world to our heart's desire — not all at once, at least. We have to take life as we find it and meet it as best we can. Knowing what we do about the true values of audio-visual materials, we should continue to exert whatever influence we have to modify dull materials. On the positive side, one need only mention navy training films and American Automobile Association visual safety campaign to applaud what has been done.

However, we shall have to have patience and realize our limitations. The tail can't wag the dog. We can't, by overdoing a good thing, run the risk of having it become a boomerang in its effect.

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So much has been written in regard to the importance of the use of various sensory aids in the classroom, that we sometimes tend to accept these materials as a panacea for all ills. We tend to forget, in other words, that the use of them is an *aid* to instruction, and not instruction itself. It is time we should give more consideration to the limitations, and perhaps even the dangers, inherent in the uncritical use and complete dependence upon such materials in our instructional program.

The first danger lies in our failure to make adequate provision for individual differences. Sensory materials do not have the same effect upon the growth of all children. A mechanically minded child will profit more through the almost exclusive use of concrete materials in the curriculum than will the child who is more abstract and verbal in his thinking. Probably the former will not need to form as many verbal concepts in preparation for the duties of adult life as the latter, whereas for the latter an over-emphasis upon the concerte will be a loss of valuable time. The mechanically minded child, on the other hand, will profit greatly from experience in the concrete objects, whereas the bookish child, being destined for other types of work, will have less need for such experiences.

A second danger is that the over-use of specific sensory materials in education may encourage a lack of coherence of knowledge. An effective correlation of the concepts to be derived from a variety of such experiences requires great skill, and expert planning, on the part of both the teacher and the class. Without this skill and planning, the children may not be able to "see the forest for the trees." A field trip to Monticello is of inestimable value if a class has been subjected to an effective pre-planning program, if there is an effective follow-through, if the pupils have clearcut purposes in mind in connection with their study in class, and if the way has been paved so

The Other Side of "Sensory Aids" to Education

By
ETHEL GARBER

that they will be able to satisfy these purposes by means of the trip. And if, in addition to these conditions, the pupils are a cooperative unit, and work together in such a manner as to foster the growth of their capacities for democratic group participation, the trip will be more than justifiable in terms of the time and money involved. If, however, a teacher merely takes a class to Monticello, turns them loose and tells them to learn what they can about Jefferson, the time used for the trip will have been wasted. Of course these are extreme cases, but all of us have known teachers who habitually neglected to plan field trips in such a manner as to bring about a worthwhile, coherent experience on the part of the pupils.

A third danger in the use of sensory aids is that of depending too completely upon them. It takes only a short time in a classroom to pass around a specimen of slate or limestone, but the planning for and presentation of a pageant or an elaborate play will take many hours. The value of the given project must be examined carefully in relation to the time required for it. Furthermore, a movie or a showing of slides on a given subject, valuable as they may be as *aids* to instruction, must not be taken as the entire scope of instruction. Such an activity, to be most effective, must be only one avenue of instruction in a given unit. The most effective means of motivation, and sensory aids are in themselves motivating, must be used to encourage the initiation of many types of responses from various pupils. These responses include reading, note taking, writing letters and other types of compositions, class discussion, tests, and all of the conventional class techniques (refined, in many cases), as well as the use of any sensory materials that may be needed. It should be remembered that the methods and materials of instruction are *only* methods and materials, and that the important thing in the end is not the method that was used, but rather the *results,* in accordance with all the recognized aims of education in a democratic society. The specific materials to be used, therefore, should be chosen in view of the total situation — the immediate and ultimate aims in the given situation and the abilities and needs of the pupils.

The fourth danger to be faced is the possibility of purposelessness in the use of sensory aids. That there should be a purpose in the use of sensory materials may appear to be a truism, but actually it is one of the most deadening diseases among educators who call themselves "progressive." A teacher in a rural oneroom school encourages her pupils to spend most of their time, for days and even weeks, in constructing items of furniture and sewing doll clothes. There is no discussion of the reasons for such activity, and there is no thought on the part of the pupils, or even of the teacher, as to the educative values to be de-

rived from such activity. When questioned, the teacher merely remarks, "I think they will learn something worthwhile. They like to do it, and it keeps them busy and out of mischief." Learning such skills, with no thought as to the values to be derived, is not worth much to the child in school.

Few if any of the recognized philosophers of education today would claim that the use of sensory aids is not an important part of public education. However, we need to recognize that there are dangers to be faced in their use, and we need to consider their use in view of their potentialities for great waste, as well as with a view to their potentialities for immense gain.

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Audio-visual aids, which are given as much attention in England as in the United States, are welcomed as the latest cure for most educational ills. There is an assumption in both countries that the educational dice have been loaded in the past in favor of those pupils who have verbal intelligence.

Aids or Substitutes?

By
I. L. KANDEL

Education in the past has been dominated by verbalism. Success in school is highly correlated with facility in the use of words. There is, of course, some truth in these statements, but those who put them forward seem to forget that the emphasis on verbalism began to be attacked almost three centuries ago and with it went a demand for great realism in the content and methods of instruction, now dignified as a demand for an experience curriculum. Such experience is to be provided directly by relating the curriculum to the local community or by the use of devices — audio and visual — to give reality to what is taught.

Now, when that is done, it may be asked by what methods will progress be measured to avoid the continuance of a practice which made "the verbal pupil darling of the schools." In an age that emphasizes the communication arts, how will the nonverbal pupil communicate what he has learned from his direct or vicarious experiences? The question is not unlike the request for a definition of a spiral.

The real issue, however, is not whether there is an overemphasis on verbalism, but whether the audiovisual apparatus is to be used as a substitute for or as an aid to understanding of words. There is too great a tendency to believe that equipment — textbooks, pictures, films and film-strips, gramophones, and radio — can take the place of the teacher. The fault lies not with verbalism in the use of words, but in the fact that inadequate attention is devoted to

meanings. Whether audio-visual aids can in this respect do what an intelligent and competent teacher should do is worth careful consideration. But even before that question is investigated, there may well be considered a number of practices whose validity has not been investigated — encouragement of rapid skimming of books, gradual disappearance of essay writing, the practice of asking pupils to say all they can on a theme in "two minutes," the idea that books should never contain any words not included in standard vocabulary lists, and the reduced attention given to grammar. Audio-visual aids can only serve to supplement not serve as substitutes for the teacher.

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B. HISTORICAL BACKGROUND

This study analyzed the principles and traced the origin and early development of educational realism. In order to accomplish this task, it was necessary to discover the basic tenets underlying the "visual education" movement. The investigation endeavored to show how the theoretical foundations of this movement are rooted in the educational thought which attended the intellectual awakening of the Renaissance and Reformation periods.

The Principles, Origin, and Early Development of Educational Realism

By
DAVID GOODMAN

The function of education is one of creating, clarifying, and transmitting experience. Thus, education attempts to guide the student to a realistic understanding of the world . . .

The learning situation in the schools embraces three primary factors: (1) the student, (2) the teacher, and (3) the subject matter. Learning is the result of appropriate interaction between these factors, a process which requires secondary factors to act as catalytic agents. They consist of methods, techniques, devices, and materials of instruction. Both primary and secondary factors become an intrinsic part of the total educative process.

Closer analysis of available source materials for learning reveals two extremes: (1) experience with actual things or in real situations, and (2) verbal transfer of such experience. The meaning derived from language symbols is dependent very largely upon the comparative richness of sensory experience. All the senses help in building experience, each new perception being a blend of past and present experiences. Acquiring concepts may be regarded as a higher function of assimilating many sense perceptions.

Meaning is given to the concept through interpretation of previous sensory data in configural patterns which function for the learner as a unit. Perception, then, is viewed as a fundamental stage in the process of learning. The term perceptual aids is applied in this study to the many types of materials, devices and techniques which afford basic sense experiences for adequate comprehension. Modern educational psychology supports this viewpoint.

An experience in school life may range from personal participation in an event in its normal setting to reading about an unfamiliar situation in highly compact technical language. Intermediate representations of actual, direct experiences furnish the learner with a meaningful background. This is the role of perceptual aids, each and every type of which possess a degree of reality for the percipient.

Educational realism is the name given to that viewpoint which regards the above process as the worthy function of the school. This theory stresses the need of bringing the work of the school into closer contact with the world outside. It is founded upon principles which bear a distinct relationship to the ideas of certain educational, philosophical and psychological reformers in the past. In so far as the Revival of Learning during the fifteenth century had an effect upon the development of educational method, it did much to channelize and harden school procedures into a formula of literary and linguistic routine. By the time the spokesmen for realism were able to make themselves heard and to demonstrate the principles of their teachings in a practical way, the literary tradition in education had become firmly entrenched.

It is not improbable that the exploration of the earth, leading to further study of the material world through the physical sciences, might have altered the complexion of later education had it not been for the fact that the literatures of Greece and Rome had already been uncovered. A vital factor in spreading and making secure the stress which Humanists placed upon classical authorities was the invention of the printing press about the year 1440. An unhealthy reverence for words had been created by the barren arguments of the Scholastics, for which the Renaissance classicists did little more than substitute the fruitless study of philosophy. Literary values were emphasized almost to the point of reverence with the result that the schools have inherited a tradition of empty verbalism.

The literary spirit of the sixteenth century prevailed over "educated" Europe until challenged by the scientific spirit of the following century. But by this time, however, the school curriculum had become settled, the rapid spread of printing and the in-

creasing use of the mother-tongues helping to seal its fate. The critical atmosphere of the Reformation helped to crystalize the earlier opinions expressed by Roger Bacon, Telesio, and Campanella regarding the importance of observing realities through the senses. The pioneers of educational realism, like Vives, Rabelais, Mulcaster, Luther, and Montaigne, helped to stir up opposition to education dominated entirely by humanistic principles.

The transition from classical humanism to educational realism took the form of a movement attacking purely verbal abstractions to a deeper concern for things in concrete form. It was Francis Bacon who first showed the world that investigation must proceed upwards from observed facts instead of downward from arbitrary premises. In so doing, he opened a vast new realm for education in which opportunities for dealing with real things would be substituted for the worthless preoccupation with mere words. He realized that instruments other than books were needed to aid comprehension.

Comenius put many Baconian principles into educational form by reducing the essence of realism to a classroom basis. He recognized the basic role of sense perception in learning. In his scheme of instruction, language was always to go hand in hand with reality, words being taught with and through things because they symbolized these same things. His Orbis Pictus gave the first real impetus to the pictorial method of presentation.

The first attempt to formulate a theory of perception as an orderly process in learning was made by Locke. The empiricism in Locke's teachings led him to proceed on the assumption that all knowledge came through the senses acting as intermediaries between the individual and the outside world. The philosophy of Berkeley adhered closely to sense perception as the basis for thinking. In his view, the process of perception can be explained only in terms of what is actually perceived. Berkeley's chief contribution to educational realism was his insistence upon concrete experience as a means of delivering us from deception of words.

Most schools in the seventeenth century were little disposed toward altering their aims or methods of instruction to make room for realistic principles. Therefore, the gap between school work and what went on outside of school remained wide. This situation has remained down to the present time, despite attempts to remedy it. For example, three centuries ago, a small circle of conscientious educational reformers including Milton, Dury, Kinner and Petty, with Samuel Hartlib as leader, endeavored to establish certain realistic tendencies in education in England, but failed in their efforts to break the domination of a strong linguistic tradition.

Conclusion: This study attempted to indicate several implications for education:

(1) Certain foresighted educational reformers in the past have sought to utilize all available means of making the educative process more realistic. In comparison with the variety of instructional aids which now exist, their tools were meager indeed. But the book, then as now, remains preeminent, despite recent research in psychology and the development of newer types of perceptual aids, such as laboratory apparatus, still pictures, models, exhibits, stereographs, slides, phonographs, silent and sound motion pictures, and radio.

(2) The advent of the printing press widened the intellectual horizon immeasurably, but, at the same time, narrowed the educational task to the scope of the printed page.

(3) What man has learned about the human eye, the voice, and the ear has been brought to bear upon the mechanical aspect of life through such inventions as the wireless, the phonographs, the motion picture, the radio and television. These instruments have the attributes and potentiality of changing the character of education as radically as did the printing press.

(4) It is not generally or clearly understood amongst educators that learning difficulties oftentimes arise due to a lack of concrete experience. The use of representations of reality, materials which may range from models to diagrams, should build perceptual experience essential to the comprehension of abstractions. If verbalism is the result of abstractions based upon an inadequate background of experience, the solution of this particular problem would seem to lie in the provision of concrete materials for sense perceptions which will give meaning to concepts.

(5) The term verbalization as used here implies the fundamental growth of language. Words convey rather than embody thought, i.e., language stimulates the formation of ideas but does not impart them directly. This may be regarded as the proper function of language. The fulfillment of the educative process requires that words become instruments of conceptual thinking on a comparatively abstract level. The caution that must be emphasized continually is that either symbols without experience or experience without vocabulary means incomplete learning. In accordance with this viewpoint, then, verbalism is the outcome of instruction carried on at an abstract level while verbalization is the attainment of meaningful abstractions through the relatively concrete experiences of the learner.   ❂ ❂ ❂

Pictographs are usually cited among man's first attempts to utilize a phase of recorded visual education. Field trips, in a very basic sense, must have preceded this attempt. The Egyptian development of clay baked picture inscriptions leading to the hieroglyphic writings, and utilization of the flat and three dimensional images are examples of early uses of the picture technique.

Historical Aspects of Visual Education

By
JOHN S. CARROLL

In, Teacher Education and Visual Education for the Modern School." San Diego: Office of the Superintendent of Schools, San Diego County, Calif. Educational Monograph 16. Sept., 1948. Pp. 9-12, 26-27.

The Greeks developed intellectual instruction in which object materials were used in teaching history and civic ideals. Drama was used to shape moral and political attitudes, music to create moods, and art to commemorate historical and religious events. Some histories of education describe the emphasis that was placed upon the field trip in the educational system of Greece and Rome.[1]

The teaching value of art also was known to the Romans. The populace learned about war victories through sculpture. Visual aids were used in schools to assist verbal instruction and were justified by intellectual leaders of the day. Cicero (B.C. 106-43) approved of visual forms as devices for remembering abstractions; Seneca (approximately B.C. 4—A.D. 65) favored visual teaching on the ground that men believe visual perceptions above all others; Quintilian (approximately A.D. 35—100) recognized that interest helps a child to absorb knowledge and he conceived of teaching the alphabet with the aid of blocks.[2]

Even the idea of motion in illusion was developed long before our modern, illusionary, and non-moving "motion pictures," by the use of images on temple pillars. Each successive pillar had on it the figure of a goddess similar to that on the previous pillar but changed slightly in position so that a rider, on a horse proceeding past at a gallop, when looking at the pillars would receive the impression that the goddess was moving.[3]

During the Middle Ages (400—1400) the church used frescoes, statues, carvings, and marionettes to teach its religious lessons to the people.

During the Renaissance (14th—16th Centuries) puppets were used in popular instruction and entertainment. Art was again important. With the invention of printing, visual aids continued in the form of woodcuts, etchings and engravings.

The first illustrated schoolbooks appeared about 1460 shortly after the invention of movable metal type. Early illustrations were copied from old manuscripts and were transferred to woodcuts which could be used in the simple printing process of that time. However, with copying and recopying, the pictures became less representative of their original meaning, so by 1500 artists began drawing directly from nature for the woodcuts. Among the early textbooks were *Der Edelstein,* 1416, a collection of fables with 101 woodcuts; *Aesop,* issued a few years later, with 200 pictures; Ptolemy's *Cosmographia,* 1478, with maps; Braydenbach's *Pilgrimage,* 1478, a famous travel book containing many pictures; *Algorithmus Linealis,* 1488, with illustrations of commercial customs and exchange, geometric diagrams, tables and examples of arithmetic operations; *Pictagoris Arithmetrice Introductor,* 1491, with thirty-nine illustrated problems; and *Summa,* about 1491, showing thirtysix positions of the fingers and the hands to illustrate finger symbolism of numbers. Music books of the time included music scores and pictures. The first printed Euclid had 420 diagrams in the margins.[4] Other early well-illustrated books were the *Novae Theoricae Planetarum* (1537) of Georgius Peurbach, and the *Philosophia Naturalis* (1654) of Henri Regius.[5]

THE BEGINNING OF VISUAL EDUCATION

About the Seventeenth Century there appeared to develop a conscious and planned effort to render the program of instruction a more concrete one. In this period John Amos Comenius (1592-1670) became known as an advocate of concrete aids to learning and supported his contentions with one of the best known of the early well-illustrated textbooks. *The Orbis Pictus* (1658), sometimes considered as marking the beginning of visual education.

Other educators concerned themselves with the problem of how to make the work of the school meaningful. This was the central problem attacked by Erasmus (approximately 1466-1536), Locke (1632-1704), Comenius, Pestalozzi (1746-1827), Herbart (1776-1841), and John Dewey.[6] The fundamentals of using concrete aids to learning were discussed in the works of Rousseau (1712-1778), Pestalozzi, Froe-

1. Cubberley, Ellwood P. *History of Education.* New York: Houghton Mifflin Co., 1920. P. 59.
2. Wendell, Thomas. "The Stream of Perceptual Teaching." *Educational Screen.* Vol. 18, Nov., 1939. Pp. 326-327.
3. Blackton, J. Stuart. *History of the Movies.* Hollywood: J. Stuart Blackton Production Co., 1934. A 16 mm. motion picture.
4. Howard, Alexander B., Jr. "Textbook Illustration: A Visual Aid." *Educational Screen.* Vol. 26, Jan., 1947. Pp. 27-28.
5. Brien, Manson M. "Notes on the Historical Background of Visual Education." *Education.* Vol. 61, Feb., 1941. Pp. 321-325.
6. Dale, Edgar. "The Why of Audio-Visual Materials." *The News Letter.* Vol. 13, Dec., 1947. P. 4.

bel (1782-1852), Herbart, and others of the early pioneers in education, many of whom stressed the field trip or "learn from nature" idea. Colonel Parker (1937-1902) later included the field trip in the program of his Chicago school.

In 1871 General Garfield, talking in New York to the alumni of Williams College, is reported to have said, "I am not willing that this discussion should close without mention of the value of a true teacher. Give me a log hut with only a simple bench, Mark Hopkins at one end and I at the other, and you may have all the buildings, apparatus, and libraries."[7] This statement has appeared in many forms and sometimes has been used to belittle the value of concrete teaching methods. However, Mark Hopkins himself, American educator and president of Williams College, used concrete teaching methods, referring to a model of a man to illustrate speeches he gave in western Massachusetts. The model cost him $600 which he paid out of his own annual salary of $1100.[8]

Many familiar objective teaching methods, such as the field trip, were used early in this country by other educators as well, but they were not always specifically associated by the users with emphasis on visual education. The term "visual education" or some variation thereof does not appear to have received emphasis by the pioneers of visual education. However, there is a distinct relation between several aspects of the object teaching movement and the activity which has since become known as visual education. Eby, in *The Development of Modern Education,* traces this relationship in some detail from the procedures used by Pestalozzi in Switzerland to the related work of Dr. Charles Mayo and his sister Elizabeth in England and thence to the object lesson procedure used in Toronto, Canada. The indirect effect of this chain of circumstances is then stated by Eby to be seen in the Oswego movement.[9]

The Oswego Movement

Superintendent Edward A. Sheldon (1823-1897) of the Oswego Public Schools became an enthusiast in the nature study phase of the object teaching method, about 1860, partly as a result of his study of the object teaching methods being used in Toronto. Consequently, the nature study field trip was used at Oswego and other related object teaching methods were utilized. Many of the people trained at the Oswego Normal School by Sheldon and Hermann Krüsi, son of Pestalozzi's assistant, who worked with Sheldon, moved into the midwest for teaching work. Their application of what they learned at Oswego probably has had a far-reaching effect. Eby evaluates the Oswego movement as follows:

"With this new and vital idea, Oswego became the hot-bed of educational progress. The enthusiasm of its students was boundless, and the new method was carried by them to all parts of the country."

Smaller Contributing Movements

Important though such large movements are in the development of visual education, the significance of the smaller, scattered, individual contributions is not to be minimized. An example of such a contribution is found in an exposition on visual education in this country in a bulletin of the "Pantographic Academy" issued in Philadelphia in 1852.[10] The author of the bulletin states: "One of the most important principles upon which our system (of pantographic instruction) is based, is that of exhibiting to the eye that which we wish to have impressed upon the mind, and consequently fixed in the memory." Methods emphasized were graphic illustrations, advantages of visual association, and systematic arrangements. Advantages of the instruction were described as: ". . . more learning in less time, more thorough learning, more systematic learning, more pleasant learning, proper balance and action of mental powers, eye and ear more highly cultivated, habits, tastes and manners improved, earlier age learning and consequent saving of time." Poetic emphasis was included, as follows:

"Sounds which address the ear are lost and die
In one short hour; but that which strikes the eye
Lives long upon the mind; the faithful sight
Engraves the knowledge with a beam of light."

The claims of this author probably were biased and it would seem that too many educational advantages were claimed, yet the terminology used and the thinking evidenced has a surprising similarity to that of nearly a century later. Two things missing in the claim were validation and psychological justification. Some fifty years later, those began to appear.

Turn of the Century

Meanwhile, the mechanics of visual education improved.

In 1890, Bristol, in defense of the "New Education" wrote at length on "The Use of the Stereopticon in Teaching."[11] Aside from the alternative choice

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7. Knight, E. W. *Twenty Centuries of Education.* Boston: Ginn and Co., 1940. P. 602.
8. Dale, Edgar. *Op. cit.* P. 4.
9. Eby, Frederick and Charles F. Arrowood. *The Development of Modern Education.* New York: Prentice-Hall, Inc., 1934. Pp. 676-677.
10. *A Brief Exposition of the Pantographic System of Instruction.* Philadelphia: Privately published. 1852. Pp. 12.
11. Bristol, Henry C. *The Use of the Stereopticon in Teaching.* New York: J. B. Colt and Co., 115 Nassau St., 1898. Pp. 15.

for the projection light of "gas light or the natural sunlight on a clear day," the descriptive matter was not greatly different from that of today.

With the turn of the century, instances of visual education activities began to appear wherein people sought to find justification of their claims of being "first." Visual aids of different kinds were emphasized and school systems began to organize specific means of distribution and utilization. Among these school systems, to name a few, were the Boston, New York, Philadelphia, and Chicago schools. With variable success, the several movements included in this period resulted in the accomplishment of valuable groundwork and stimulated interest on the part of school people throughout the country . . .

CHARACTERISTICS OF VISUAL EDUCATION

There are certain important characteristics of the development of visual education that have not been touched on . . .

In the major development stages of visual education there has been strong evidence of a natural tendency for the movement to grow into a large and united trend on the part of the nation's schools toward utilizing the concrete aids to teaching. In many instances, just when the various important functionaries in the field have seemingly united their efforts for the common good, the situation has been recognized as having commercial possibilities for one or more of the individuals or groups cooperating. For example, the wartime emphasis on the use of visual aids caused many organizations and individuals to rush into the visual field to take advantage of the ready market.[12]

The results of this recognition of commercial possibilities have limited the cooperative development of the visual education movement, although many smaller and independent contributions have been made. One example may be cited to show what could have been. Some years ago a meeting was held by a group of people who represented several major phases of visual aid work, including still projection and motion-picture projection equipment producers, large sources of still-picture and motion-picture materials, photographic corporations, schools and colleges, a large foundation, and others.

It was proposed at the meeting that the people present combine the facilities of their respective organizations to the end that visual aid equipment and materials be made more universally available. The plan progressed beyond the initial stages, but was reported as being discontinued due to the efforts of a small portion of the group to commercialize on what apparently could have been a cooperative plan benefiting all concerned.

In several other cooperative attempts well known to people in the field of visual education, the end products have been uniform — the gain, strength, educational effectiveness, and benefit that possibly would have accrued to the nation's schools if the persons and organizations had been able to work together were lost; all that remained after each such episode were the scattered pieces that represented the various separate attempts to specialize and commercialize on the phase of visual education at the expense of the other phases.

Thus we have had repeated instances of groups asking that motion pictures only be considered as visual education, or that still pictures or others of the various visual aids be considered as the whole rather than the part.

One of the ventures in this respect was found in the initial advance of the sound picture. School people were asked to consider it as a new means and method of education and, by implication if by no stronger means, the others of the visual aids were, consigned to minor roles.

The visual education conventions, while providing for the interchange of ideas, have not contributed sufficiently to the cause of teacher education and visual education, although group dynamics techniques in more recent meetings have brought improvements. A characteristic of the more successful conferences — success meaning attendance, planning, participation, and reporting by capable people — is the establishment of plans or programs of action for the organizations concerned.

Despite obstacles there has been a vigorous growth in the use of visual aids and the development of visual education continues. Each year the mechanics and principles of visual instruction are pentrating to more and more of the teaching body. As visual-sensory aids to learning are more and beter utilized each year, then there will come, too, a balanced practice regarding the whole roster of such aids and improvement and synthesis of the research and literature in this field. ⊙ ⊙ ⊙

Editorial note: Prior to the appearance of Brien's article, which follows, most of the historical writing on visual education started with the "Orbis Pictus" by Comenius and then skipped to the twentieth century. The influence of Brien's paper on Carroll's work is clear. We need more studies of the type reported by Brien and Carroll.

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12. White, Thurman. "The Problem of Visual-Education Opportunities." *Film and Radio Guide.* Vol. 13, Nov., 1946. Pp. 7-8.

It is an unusual thought, yet none the less true, that visual education as a teaching method reached an apogee during the Middle Ages. Then, as at no other moment in history, were all the sources of art devoted to instructional purposes. The scultpure which decorated the porches and screen of the great cathedrals was, itself primarily educative. Not even the most unlettered, after seeing the gleeful devils speeding their prey to the cauldrons, could doubt the fate of sinners on the Day of the Last Judgment; nor could the simplest child fail to understand the life of Christ as depicted upon the choir screen at Chartres.[1] Stained glass, also, furthered the same ends.

Notes on the Historical Background of Visual Education

By
MANSON MILNER BRIEN
Education. Vol. 61, No. 6, Feb., 1941. Pp. 321-325.

Although the symbolism in this medium is frequently difficult to grasp without a thorough knowledge of the Bible and of hagiography, it is clearly evident that the instructive element is always omnipresent. Indeed the entire scheme of gothic architecture was directed toward a concrete demonstration of theological mysteries.[2]

Of equal importance with sculpture and glass was the art of painting. Unfortunately the wear of centuries has destroyed the great medieval murals, but the miniatures on vellum, ivory or wood remain; and miniatures always taught! No finer examples exist than those from *Les Très riches heures du Duc de Berry*,[3] which depict the activities of the months and seasons with a detail that is frankly amazing. So during an age of faith, when the paramount ideal was an exposition of Christianity, when manuscript books were few, possessed only by scholars and by the extremely wealthy, it is well to note the practical dependence upon the "visual" alone as the chief means of instructing.

At no time did the invention of printing put an end to this stream of reliance upon the visual. Indeed the woodcut had been perfected some years before the birth of movable type, and these two procedures supplemented each other in a truly remarkable manner.[4] It is quite apparent, however, that after the middle of the Fifteenth Century, the old arts of sculpture and stained glass visibly declined. But, conversely, the printed book and its illustrations steadily improved. Nowhere was there a distinct break in the continuity of visual teaching. Naturally the precepts of faith maintained their predominance. The printed books of the Hours continued to be as pictorial as their predecessors in manuscript and as literature became more and more secular, the same cuts began to serve both for an *Amadis* and for *Les Heures*.[5]

During the first three centuries of bookmaking the woodcut, etching and engraving constituted the chief mediums of illustration. The woodcut is purely a relief print from a wood block upon which the cutter worked from black to white, and the result fitted harmoniously into the printed pages. As the design became increasingly elaborate, the skill of the forme-cutters kept pace, and the woodcut ended by becoming a richly shaded print similar in many respects to metal work. Etching is done upon a metal plate, which is varnished, the lines scratched in, and then eaten out by acid . . . Engraving, of course, is simply bare metal drawing, and its use as a visual aid is almost synonymous with the invention of printing itself. Maps for printed books were engraved as early as 1478.[6] Of all these methods the woodcut proved the most advantageous in the earlier printing. It could be set directly in the formes along with the type, and the text and its illustrations could be run off together. The other procedures all required separate presswork. Thus the woodcut became the most common among visual aids.

Historians of Education have commonly credited John Amos Comenius and his *Orbis sensualism pictus* as being the fount of visual instruction in theory and in practice. Actually nothing is further from the truth. The *Orbis pictus* may or may not have been the first illustrated book devoted exclusively to children, but in either case, Comenius employed a technique and an educative medium which had been in common use since the beginning of printing. To be convinced one need only compare the reprints from the original copper plate engravings of the 1658 edition[7] and their usage in a text with the procedures of Henri Fegius in his *Philosophia Naturalis*, published by the Elzevirs in 1654,[8] four years before Comenius; or with the *Novae Theoricae Planetarum* by George Peurbach, published in Venice in 1537, nearly a century and a quarter earlier. There can

1. Adams, Henry, "Mont-Saint-Michel and Chartres," 16th ed., Boston: Mifflin, 1926, Ch. 4 and 5. An excellent treatment of the theories expressed in this first paragraph. See also: Walker, J. Bernard, "Cathedrals of the Old and New World," *National Geographic*, Vol. 42, 1922. P. 89.
2. Adams, *op, cit., loc. cit.*
3. "Les Très riches heures du Duc de Berry," Paris: Veuve, Vol. 2, No. 7, April-July, 1940.
4. Audin, Marius, "L'Histoire de l'imprimerie par l'image," Paris: Jonquères, 1928, 4 vols.; 1: Figs. 49, 50 and 51. See also Poortenaar, Jan, "The Art of the Book and Its Illustration," London: Harrap, 1935, p. 146.
5. *Ibid.*, pp. 50-53; a fine example of the transfer of cuts.
6. Poortenaar, *op. cit.*, p. 152.
7. Comenius, John Amos, "Orbis pitus," C. W. Baardeen, ed and pub., Syracuse, N.Y., 1887, p. iv and the text.
8. Regius, Henrius, "Philosophia naturalis," 2nd ed., Amsterdam, Elzevir, 1654.

be no doubt that the steady development from the earliest illustrations in the middle Fifteenth Century to the skilled technique of the Elzevirs, shows conclusively that Comenius prepared his *Orbis pictus* according to a pictural method already as perfect as that of a modern textbook.

Indeed the Seventeenth Century witnessed an exceedingly widespread use of the visual aids. Medicine, diplomatics and paleography, history, geography, travel, mathematics, physics and astronomy, are but a few of the fields wherein there are enough tomes extant today to attest the common employment of such illustrations as a means of learning. Generally these volumes dealt only with scholarly subjects, and were written for the mature student, but the elementary schools of the period did not lag far behind in putting such ideas into actual practice.

The great moralist of Jansenism, Pierre Nicole, a contemporary of Comenius, propounded the theory that children should be taught through their senses. Instruction in a new subject should always be given by means of an appeal to their sight and hearing. He developed his methods in the Jansenist schools of Port-Royal, where in the history and geography classes, maps, pictures, globes, flashcards and realia were constantly employed.[9] However, the destruction of Port-Royal by the government of Louis XIV brought these schools to an end before they had effected any profound methodological advances.

More fortunate were the schools of the Oratory. After the Jesuits, the Oratorians were the most powerful teaching order in France, and indeed, upon the expulsion of the former in the Eighteenth Century, they practically controlled the French educational system until the days of the Revolution. The methods of the Jansenists were more or less in vogue among these schools, despite the fact, that as a whole, the Oratorians remained considerably closer to the more formalized ideals.[10] The Abbé Nicolas' Lenglet du Fresnoy (1674-1755) was a product of their training, having performed his higher studies at the Collège de St. Magliore in Paris.[11]

A somewhat inept politician, Abbé Lenglet gained renown as an historical and geographical methodologist and as a critical editor. Although in the course of his long scholarly career, he devoted but four years to the writing and editing of children's textbooks, the education of youth was constantly on his mind. Lenglet claimed, not without reason, that children learn more readily when they employ their ears, their eyes and their hands. More specifically he applied this theory to chronology, which in his age was a subject equally as important as history itself. He had always placed chronological tables

in his histories, but for instructing school boys he had these tables made up into large folio sheets. As for their use, in 1713 he wrote:

"You must place them before their eyes so that a single view of these tables may arrange in their minds the histories about which you are speaking."[12] Nearly twenty-five years later, in 1736, he reiterated his thought:

"I do not wish to embarrass their replies by a detail of chronology. I prefer to bring it to their eyes rather than to their memory. That is what I practice by means of these tables."[13]

Three lasting pedagogical results stemmed directly from Abbé Lenglet's ideals. First: chronology became a subject of purely secondary value; second: the fashion of memory work for memory's sake was severely weakened; and third, comprehension by means of visual contact became increasingly important as a teaching method in the classroom.

In the realm of geography Lenglet placed even more reliance upon such aids. He stated in 1713:

"As visible images make a great impression on young people, above all, you must pay attention to them, by showing them (the children) in a few pictures, the histories about which you were speaking . . . which represents them in a more lively manner. This method will not fail to touch them where they are most sensitive."[14]

Again, thirty years later in his *Méthode pour étudier la géographie*, he advised this procedure:

During the lesson have, "The pupil give some attention to locating on geographical maps, the places marked. . . . Then the eyes act much more than the mind. . . . This method possesses a double advantage. It serves not only to fix the imagination, but it also has the pleasure of removing from geography a repulsive dryness."[15]

The truth of this last statement may be forcefully realized by recalling for a moment that eighteenth-

9. Compayré, Gabriel, "Histoire critique des doctrines de l'èducation en France," Paris, 1880, 2 vols.; 1: 269 and 283.

10. Barnard, Howard C., "The French Tradition in Education," Cambridge, England, 1922. Pp. 164-166.

11. For information on Lenglet du Fresnov see: Brien, Manson Milner, "Papers of the Michigan Academy of Science, Arts and Letters," 18: 457-478; 19: 427-439; 20: 497-504; 23: 507-516; and the "Romantic Review," 25: No. 4; 378-380. A paper on the educational theories of Abbé Lenglet is now in preparation.

12. Lenglet du Fresnoy, "Methode pour étudier l'histoire," Paris. Coustelier, 1713, 2 vols. in-12; 1:348.

13. Lenglet du Fresnoy, "Principes de l'histoire pour l'éducation de la jeunesse," Paris: de Bure l'ainè, 1736-1739, 6 vols. in-12; 1: xv.

14. Lenglet, "Histoire," *op. cit.*, 1: 347.

15. Lenglet du Fresnoy, "Méthode pour étudier la géographi," Paris: de Bure l'ainè and Rollin fils. 1742. 7 vols. in-12: 1 [part I]: 22-23.

century maps were not the dried-up colour spreckled affairs of today, but handsome works of the engraver's art, decorated by ships and dragons, winds and stars, trees anrd mountains. They would hold any pupil spellbound.

Abbé Lenglet died in 1755 and it may be said without favour, that his ideals represented the philosophical peak of visual education in the Eighteenth Century.

Actually the age immediately following the death of Lenglet was very much aware of the potentialities of an illustrated context. The *Année Littéraire,* a critical review edited by Elie Fréron between 1754 and 1769, discloses, by means of a random sample, the extent to which textbooks or other volumes having visual aids were published during those fifteen years following the middle of the century.[16] As the following table shows. over fifty percent supplemented textual material in this manner:

Subject	No. of books published 1754-1759	Illustrated
Pedagogy	27	12
Geography	25	13
History	8	4
Natural History	6	5
Physicis	2	2
Medicine	1	1
Geometry	1	1 (diagrams)
	—	—
Totals	70	38

It is not surprising, of course, to find that the books in medicine, physics, geometry and natural history made complete use of such material. But it is quite amazing to realize that nearly two hundred years ago, half of the new volumes in history, geography and pedagogy had been adapted to methods of visual instruction. Certainly the Eighteenth Century did not lag behind its predecessors in this respect!

Indeed visual education today is neither a fad nor a fetish, but the culmination of consistent progress throughout eight hundred years. Modern inventions and modern techniques have in no way altered its fundamental philosophy. Rather they constantly present an ever widening opportunity which requires, perhaps even demands, a thorough investigation on behalf of teachers and students in every field, if we are to be true to our heritage. ✪ ✪ ✪

Editorial note: Taken together, the three papers by Goodman, Carroll and Brien (preceding) and the two by McClusky (which follow) give the reader a balanced picture of the historical background of audio-visual education. The current emphasis on teaching "meanings" is a product of the philosophy of educational realism.

Historical Development of the Audio-Visual Concept in Education

By
F. DEAN McCLUSKY
In, "Audio-Visual Teaching Techniques." Dubuque: W. C. Brown Co.. 1949. Pp. 28-32.

Audio-visual instruction may be traced through the educational history of mankind. In primitive times, boys were taught to hunt and fish and girls to cook through imitation, observation, and participation correlated with the necessary language explanations. Man's earliest records were picture records. Neolithic men drew pictures to warn and to inform. The early Egyptian records were almost entirely pictorial. In the Western Hemisphere, the Mayans and Aztecs recorded their experiences through a system of picture writing. The early Greek and Roman teachers utilized the school journey, the sand as a blackboard and real objects in their instructional procedures. The forerunners of modern education advocated the use of visual-sensory instruction. Many famous educational leaders; such as, Comenius, John Locke, Rousseau, and Pestalozzi emphasized it.

John Amos Comenius (1592-1670) was educated to be a Protestant minister in German universities. The most widely used and influential book to come from his pen was the "Orbis Pictus" (World in Pictures) published in 1658. It was illustrated by one hundred and fifty pictures printed from copper cuts, each picture serving as the topic of a lesson. Some of the topics which the pictures illustrated were God, The Heaven, The Air, Earth, Tree, The Seven Ages of Man, The Making of Gardens, The Potter, Geometry, The Eclipse, Religion, The Last Judgment, and A City. This book was written in Latin and High Dutch, and many editions of it were printed, some even as late as the 19th Century. The following quotation from the preface of the Eleventh English-Latin edition published in London in 1728 and reprinted by C. W. Bardine, Syracuse, in 1887, will serve to indicate the extent to which Comenius believed in the necessity of visual instruction in the elementary school.

"Let it ("The Orbis Pictus") be given to children into their hands to delight themselves withal as they please, with the sight of the pictures, and making them as familiar to themselves as may be, and that even at home before they be put into school.

16. I acknowledge with gratitude the kindness of Messrs. Gravit and Prator of the University of Michigan for allowing me to use their index (now in preparation) to the reviews published by Fréron. Their work will supply a long felt need.—M. M. B.

"Then let them be examined over and anon (especially now in school) what this thing or that thing is, and is called, so that they may see nothing which they know not how to name, and they can name nothing which they cannot show.

"And let the things named them be shewed, not only in the picture, but also in themselves; for example, the parts of the body, clothes, books, th house, utensils, etc. . . .

"Let them be suffered also to imitate the Pictures by hand, if they will; nay rather, let them be encouraged that they may be willing: first, thus to quicken the attention also toward the things; and to observe the proportion of the parts one toward another, and lastly to practice the nimbleness of the hand, which is good for many things.

"Things rare and not easy to be met withal at home might be kept ready in every great school, that they may be shewed also, as often as any words are to be made of them, to the scholars.

"Thus at last this school would indeed become a school of things obvious to the senses, and an entrance to the school intellectual."

The "Orbis Pictus" was a forerunner of the illustrated Primer and Reader and set the model which authors of such books followed until the perfection of photo-engraving and modern printing processes made more elaborate illustrations in readers possible. Among the multitude of principles which Comenius advocated were the following:

"1. A graduated series of textbooks and illustrative material should be provided as an absolutely necessary means for improvement in instruction.

"2. At first subjects should be presented orally by the teacher, and pictorially illustrated where possible.

"3. Actual objects and things should be studied first, and language in connection with such study."[1]

Comenius may be credited with being one of the first educators of prominence in Western civilization to make practical use of pictures in teaching. The influence of his work extends to modern times over a span of nearly 300 years.

John Locke (1632-1704), the great English scholar and philosopher, is mentioned here because of his influence on Rousseau. Locke advocated that education should be practical and playful and it was through Rousseau's formulation of Locke's ideals as set forth in the "Emile" that his ideas became a force for educational reform. Parker describes Locke as the fountain-head from which Rousseau gained inspiration for his attack upon the 18th Century dancing master education of France.

Jean Jacques Rousseau (1712-1778) published the "Emile" in 1762. The appearance of this book crystallized the growing unrest in education sufficiently to break traditions of two hundred years' standing. It started a revolution in educational theory and practice, the reverberations of which are still to be felt. It was written primarily as a treatise on child psychology.

Rousseau advocated the necessity for studying children. It is not necessary here to go into a detailed account of Rousseau's ideas other than to call attention to those which emphasize the importance of visual-sensory instruction. Rousseau postulated that instruction should start with physical activity in a natural setting. He made sense perception fundamental in elementary education by advocating not only physical activity, but also a varied experience with natural objects through first-hand contact and manipulation. In commenting upon Rousseau's influence, Parker says:

"The necessity of such experience with organic and physical nature, as the source of knowledge, was another principle in Rousseau's psychology of child experience. Contemporary teachers either consider it unnecessary to give knowledge of the world of things or assumed that such knowledge could be secured through a study of words and books. So thoroughly did Rousseau oppose this practice that he advocated making the education of the child between the ages of five and twelve entirely 'education through experience and the senses'. There had been educational reformers before Rousseau who advocated the study of things. Comenius was the most important of these, but he had not succeeded in reforming school practice. But it is this phase of the Rousseau movement that first and most extensively modified the practice of elementary teaching, to some degree in the schools of Basedow, but more particularly in the 'object teaching' of Pestalozzi and his followers."[2]

"Rousseau not only believed that children were capable of reasoning, but he also believed that the premature memorizing of words before they were understood formed in the child's mind wrong connections and bad habits which subsequent education would not be able to repair. His denunciation of the current practice of cramming children's memories is one of the most telling arguments in the 'Emile'. It was very influential, particularly with Pestalozzi, although the latter was not consistent in its application and soon set children to memorizing lists of words."[3]

1. Samuel Chester Parker, *The History of Modern Elementary Education*. Boston: Ginn and Company, 1912. P. 143.
2. Parker, op. cit. P. 193.
3. Ibid, P. 197.

If one were to doubt Parker's interpretation of Rousseau, we may let Rousseau speak for himself. "In any study whatever, representative signs are of no account without the idea of the things represented. The child, however, (in ordinary practice), is always restricted to these signs without ever being made to comprehend any of the things which they represent. We imagine that we are teaching him a description of the earth, but we are merely teaching him to know maps. We teach him the names of cities, countries, and rivers, but he conceives them as existing nowhere save on the paper where they are pointed out to him."[4]

"As all that enters the human understanding comes through the senses, the first reason of man is a sensuous reason; and it is this which serves as a basis for the intellectual reason. Our first teachers of philosophy are our feet, our hands, and our eyes. To substitute books for all these is not to teach us to reason, but to teach us to use the reason of others; it is to teach us to believe much and never to know anything."[5]

Rousseau's program of instruction based upon sense perception and active observation led him to advocate the necessity for scientific investigation as a first principle through the discovery by the child for himself of scientific facts and the development of a psychological order of topics in terms of the child's interests. Rousseau expected the child to cultivate a genuine curiosity for and interest in the world about him, and thus expected that the child would be able to think for himself rather than accept the thinking of others.

Reference has been made to Pestalozzi (1746-1827), another great leader in education. His experimental schools in Switzerland were for 25 years the Mecca of European and American educational leaders. He was greatly influenced by Rousseau and his first educational experiments were conducted in the training of his own child on a farm. Rousseau's "Emile" was the guide which he followed there. Parker states that "Pestalozzian objective and oral methods represent the largest practical influence of Pestalozzi in carrying out the principles of instruction advocated by Rousseau.[6]

In connection with his object teaching, Pestalozzi created a technique of oral instruction which actively was in competition with textbook instruction, particularly in the United States during the latter half of the 19th Century. Pestalozzi wrote vigorously against teaching words and phrases that children did not understand. To quote him:

"In Europe the culture of the people has ended by becoming an empty chattering, fatal alike to real faith and real knowledge; an instruction of mere words and outward show, unsubstantial as a dream, and not only absolutely incapable of giving us the quiet wisdom of faith and love, but bound, sooner or later, to lead us into incredulity and superstition, egotism and hardness of heart. . . . Everything confirms me in my opinion that the only way of escaping a civil, moral, and religious degradation, is to have done with the superficiality, narrowness and other errors of our popular instruction, and recognize sense impression as the real foundation of our knowledge."[7]

How easily those words could have been written today. Pestalozzi's greatest contribution in putting into practice Rousseau's thesis of the necessity of experimentation, effective reasoning, and constructive work with the observation of natural objects was the desirability of describing these experiences in a more systematic manner. Unfortunately, many of Pestalozzi's followers, in their efforts to be systematic, developed highly formal methods of teaching. Progressive teachers today are swinging back from this formalism to a truer interpretation of the methods and practices advocated by Rousseau and Pestalozzi.

The writings of Comenius, Locke, Rousseau, and Pestalozzi can be traced directly to the practice of modern American schools today. One cannot help but wonder what these men would do and say, if they were to see modern schools equipped with audio-visual materials; such as models, maps, charts, diagrams, illustrated books, silent motion pictures, sound motion pictures, lantern slides, and stereographs, the like of which they never dreamed. With the sudden growth of mass education, the task of taking large numbers of children to Nature for first-hand experiencing and development became difficult to administer, but now it is literally possible to bring Nature into the classroom through the medium of sound and silent motion pictures, stereographs, and other forms of objective representation. Now it is possible to effect in some measure the kind of teaching which these early leaders advocated.

Whereas schools of the past used audio-visual materials to a limited degree, modern science and invention have opened unlimited possibilities in the organization of concrete materials for teaching purposes. The invention of the photograph and of photo-engraving have given us photographically illustrated magazines, newspapers, books, and school texts of high quality. A teacher with a pair of scissors and files of magazines and newspapers has at her disposal an unlimited supply of pictures for use in the

4. Ibid, P. 194.
5. Ibid, P. 194.
6. Ibid, P. 343.
7. Ibid, P. 324.

classroom. All modern texts contain illustrations. Some textbooks consist almost entirely of pictorial material. The process of manufacturing such teaching materials is an exact science which has made possible large-scale production of books at a price within the reach of children who go to our schools, public and private. No longer is it necessary as it was in the time of Comenius to advocate that each child be provided with his own printed copy slips rather than slips written by the teachers.

The microscope and telescope have revealed to us the existence of worlds that were unknown a short time ago. Photographs of microscopic life and of the heavens as revealed by the telescope enable children in elementary and secondary schools to comprehend something of the nature of our universe. The photograph also aids scientific workers in biology, the physical sciences, and astronomy in extending the range of the vision of man and serves to scientifically record data which would otherwise be impossible. The invention of the micro-projector enables a large class or a group of people to observe the wonders of microscopic life projected on the screen with such clarity and size that even those who are unable to master the miscroscopic technique can experience directly the wonders of unicellular life.

Stereoscopic photography has made it possible for us to observe in pictorial form, reproductions of scenes in three dimensional space. By means of the illusion of three dimensions, as observed through the stereoscope, one can view and study for himself the geography, customs, and life of peoples throughout the entire world. The student viewing stereoscopic pictures can project himself into the scene and study it in detail.

Heretofore, language and drawings were the tools which men used to communicate ideas and to record experiences. Without these tools, civilization could not have progressed and it has taken man thousands of years to bring them to their present state of efficient use. Within the past fifty years — a mere dot of time in man's hundreds of thousands of years of development — scientists have developed a third great medium of communication and system of making records, the motion picture. The cinema with and without sound, in black and white or in color, has become a major factor in modern life: for the dissemination of information, knowledge, and ideas; as a medium of entertainment; and for the development of attitudes. High speed and stop time motion pictures have opened new fields for investigation. In addition, 3D or stereoscopic sound motion pictures have been perfected. Intelligent people throughout the world believe that the motion picture will advance knowledge and that it should become one of the school's most valuable teaching devices.

In addition to the motion picture, science has added the radio, sound reproduction and television to modern methods of communication. Through these media, schools may tune in on the world's events as they occur, may listen to the best music and to the spoken words of the world's great leaders in all fields of human endeavor. And when television becomes more practical, school children will be able to not only listen to world events, but to see them as well. Already the radio is being used to extend the influence of the lecture, of music and of the drama to school and home, to office and factory, to the church and hospital, and to the prison and those who are remote from centers of civilization.

Not only have methods of communication been increased and speeded up, but also methods of travel. The railroad, the automobile, and the airplane enable people to move quickly from one part of the world to another and to see the world first hand. The scope of the school journey has been widened and horizons advanced. These changes in rapidity of communication and in travel have come about in such a short space of time that educators have been unable to avoid confusion as to the place of these tremendously intriguing instructional possibilities in school procedures. The situation is filled with opportunities for educational advancement in method and technique.

* * *

Prior to 1905, a few city, state, and private museums were conducting educational programs in conjunction with schools. One museum whose work had attracted wide attention was the Philadelphia commercial museum.

About the year 1900, the museum prepared and presented free of cost to schools in Pennsylvania, 250 collections. Each set contained several hundred specimens of imported commercial products, and from 100 to 200 photographs. The collections proved to be of great service, furnishing object lessons of much value in the study of geography and commerce.

Historical Development of Administrative Units for Audio-Visual Materials

By
F. DEAN McCLUSKY

The Philadelphia Commercial Museum was established June 15, 1894, as a direct outgrowth of the World's Columbia Exposition. It was not established to work in conjunction with the public schools, but for the benefit of business men. Its educational work de-

veloped in response to the demands made upon the institution by teachers and school officials.

The first school museum was organized at St. Louis in 1905. The school museums established in St. Louis (1905), Reading (1908), and Cleveland (1909) were the first museums organized for the sole purpose of providing material for instruction in public schools. An account of the establishment of the St. Louis educational museum is to be found in the Annual Report of the Board of Education, St. Louis, Mo., for 1905-06. One finds there a seven page discourse on visual education which is surprisingly comprehensive. The principle which guided the collection of materials for the museum is stated thus:

"The educational museum is conducted in accordance with the principle that it is not maintained for the purpose of collecting and displaying specimens of general scientific importance, but to collect and preserve only such objects which are of direct and evident use for instruction in the public schools." (p. 187.)

The museum printed a catalog which was, "not merely an enumeration of the specimens in the museum, but [was arranged] so as to suggest to the teacher how to use the collections in connection with the lessons of the school room."

This museum circulated 5,011 collections the first year. It cost the school board $5,303.77, of which $1,270.95 was spent for transportation of material by means of a driver and a horse and wagon, and $188.34 was paid for the publication of a catalogue.

Three points concerning the early work of the St. Louis school museum deserve emphasis: first, the collections were built to *supplement* the course of study, not to supplant it; second, provision was made for the transportation of materials from the museum to the schools and return; and third, a catalogue of materials arranged in terms of the course of study was printed and placed in the hands of the teachers. These points are today, as then, of importance as basic principles in the efficient administration of audio-visual education in a city school system.

The Cleveland Educational Museum was established in 1909. Cleveland, as did St. Louis, organized the museum to improve instruction in the public schools of the city. That it admired the work of the St. Louis museum is evidenced by the following quotation:

"The schools of St. Louis are supplied with illustrative materials from an educational museum which has more than 22,000 cases of materials. Educational authorities of this country have fully approved the

St. Louis plan for providing the teacher and pupils with illustrative material."[1]

At St. Louis and Cleveland, the collections were sent to the teacher as ordered. Each collection contained objects, specimens, models, pictures and printed pamphlets. The collections enjoyed wide popularity and their circulation required the efficient services of a staff of workers. These museums also furnished illustrative materials for lectures and set up, from time to time, exhibits of the non-portable type which could be viewed at the museum.

In contrast to the St. Louis plan, a number of city museums[2] doing educational work confined their school activities (1) to illustrated lectures given at the museum which were related to the school curriculum and (2) to the exhibition of non-portable exhibits which were viewed by groups of children. In this manner, two diverse policies were developed. One was "take the museum to the classroom"; the other was "take the class to the museum."

The Reading, Pennsylvania School museum, established in 1908, was modeled after its neighbor, the Philadelphia Commercial Museum. This pair of institutions not only sent collections to the classrooms of the city, but set up non-portable exhibits of various types which could be viewed at the museum. They also offered extensive lecture courses for school children at the museums. Hence, one found at the Philadelphia and Reading museums an example of both policies being put into practice.

The next large city school system to establish organized audio-visual education was Chicago. The history of the creation of the Chicago bureau in 1917 is of interest. The principals of the Chicago Public Schools organized, about 1895, a projection club, contributing $25.00 each toward a fund to purchase lantern slides for their schools. Each school purchased its own lanterns. The work of this club grew to such an extent by 1917, that an arrangement was consum-

1. Annual report of J. M. H. Frederick, Supt. of Schools for the school year 1914-1915 to the Board of Education, Cleveland, Ohio, published by the Cleveland, Ohio, Board of Education, January 24, 1916. P. 62.

2. Note. For further detailed information concerning the work of these school museums and other museums doing education work, the reader is referred to the following references:

   1. The Proceedings of the American Association of Museums, Vol. VIII, 1914. P. 54 ff.

   2. Rathmann, Carl G. "The Educational Museum of the St. Louis Public Schools." United States Bureau of Education, Bulletin 1914, No. 48. Pp. 55.

   3. Rea, Paul Marshall. "Educational Work of American Museums." Report of the Commissioner of Education; 1913, Vol. 1, Ch. 13, pp. 299-311; 1914, Vol. 1, Ch. XXIII, pp. 497-511; 1915, Vol. 1, Ch. XXII, pp. 539-557; and 1916, Vol. 1, pp. 401-411.

mated[3] whereby the school board assumed responsibility for visual instruction, took over the equipment of the club and placed it in the hands of a visual education department.

Many departments were organized between 1917 and 1923. Immediately following the establishment of the Chicago bureau, the public school systems of Newark, Detroit, Kansas City, Pittsburgh, Los Angeles,[4] New York, Sacramento, Atlanta, Berkeley, Buffalo, Oakland and Philadelphia[5] organized departments of visual instruction. These bureaus of visual instruction developed along with the agitation for the introduction of moving pictures into the public schools, a movement which gathered impetus in 1919 from the activity of the U. S. Government and that of the U. S. Bureau of Education. Thousands of war films were given to universities and state departments of education for distribution.

A visual instruction directory published by the National Academy of Visual Instruction in 1931, showed that:

1. There were twenty-eight officials in charge of state visual instruction service in 25 states and Hawaii.

2. There were twenty-two officials in charge of museum visual instruction service, representing 21 cities located in 12 states and the District of Columbia.

3. There were two hundred twenty-five officials in charge of city, district and county departments of visual instruction representing 205 cities and communities located in 33 states.

4. That some of the largest city school systems, i.e., New York, Chicago, Philadelphia, Detroit, Los Angeles, St. Louis, Pittsburgh, Cleveland, Atlanta and Newark had organized departments of visual instruction. The annual budget in Pittsburgh for visual instruction was $113,250.00.

Since 1931, scores of new names have been added to the growing list of school systems which have set up departments of audio-visual instruction. The successful use of training aids by the Armed Services in World War II has given added impetus to the movement. A survey conducted by the Research Division of the National Education Association in 1946, shows that:

1. More than three-fourths of cities over 100,000 in population have special agencies to supervise audio-visual instruction.

2. More than a third of cities from 30,000 to 100,000 also have special audio-visual centers.

3. 873 cities reported an anticipated increase of expenditures for audio-visual instruction of 9% for 1946-47 over 1945-46.

4. 873 cities anticipate spending $1,787,125 in 1946-47.

The National Education Association in recognition of the extent of organized audio-visual instruction in public schools has established a permanent Division of Audio-Visual Instruction at its headquarters in Washington, D. C. Leaders in education predict continued growth in audio-visual instruction in our schools.

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C. AUDIO-VISUAL MATERIALS AND THE CURRICULUM

I have rather recently reached the conviction that it is ineffectual to urge teachers to use more audio-visual materials. We — you and I and others like us — spend hours at this type of exhortation. We ask teachers to make more extensive use of flat pictures, slide films, motion pictures, maps, globes, models, records, and realia of all sorts. At educational conventions, conferences, and workshops someone seems always to be on his feet pleading with teachers to do something different from what they are doing. I recently heard teachers advised that they should use at least two motion picture films per week in every class. This recommendation was directed at a large, heterogeneous group of teachers, and the implication was that irrespective of what was being taught, no teacher should have real pride in her work unless she used two motion picture films a week.

The Unique Contribution of Audio-Visual Instructional Materials in the Curriculum
By
STEPHEN M. COREY
California Schools. Vol. 19, Jan., 1948. Pp. 33-36.

Getting teachers to use a greater variety of instructional materials by pleading with them or scolding them is ineffectual for three reasons. First, it confuses means and ends. All instructional materials are means to an end, and it is the end, pupil learning, that is all important. Any general claim that all teachers should spend a certain amount of class time using films, or pictures, or transcriptions, or recordings misses the point. The kinds of instructional materials to be used depend upon what the teacher is trying to teach.

The second reason for the ineffectiveness of urging teachers to increase their use of audio-visual instructional material is that this sort of preachment

3. 64th Annual Report of the Board of Education, City of Chicago, June 30, 1919. Pp. 121-122.
4. Reorganized, 1923, as a distinct separate department, formerly a division of the pedagogical library.
5. A slide library circulated under the direction of the pedagogical library of Philadelphia was in use before 1915.

puts us in an indefensible position. We are pretending to know entirely too much about the business of other people. This is a problem that thoughtful directors of audio-visual programs have expressed concern about many times. They frequently find themselves implying that they know all about the entire curriculum as well as all about the best instructional materials that this curriculum requires. This claim is absurd, of course, but the impression is given because of the way certain — and I am sure it is a minority — dominating and directive "audio-visual experts" behave. These individuals are quite apt to be those who want a great deal of authority. They strive constantly for administrative status that will enable them to give orders that will be obeyed.

The third — and a pragmatist would put this first — reason for my discouragement at exhortation as a method of improving classroom use of instructional materials is that very few people are changed under any circumstances by exhortation. Those who are pled with listen to us, if they must, take a deep breath when we are through, and go back doing very much as they were doing. The realist could expect little else. Using audio-visual materials frequently and wisely requires much more on the part of the teacher than the vague feeling that she ought to do what someone tells her to do.

In contrast to exhortation or administrative directive as a method of increasing teacher use of audio-visual instructional materials, is the method of conference or consultation. This involves having the instructional materials expert work *with* teachers, not *on* teachers. He helps them to do better the task they are already working on. There is one thing all of us school people — teachers, administrators, supervisors, curriculum directors, and directors of audio-visual programs — have in common. This is our desire to develop better schools for children — to improve instruction to the end that boys and girls will learn more important lessons in less time.

There is every reason to believe that classroom teachers are just as interested as we are in the improvement of instruction. Administrators are as interested as we are, and so are supervisors, and curriculum co-ordinators. We all stand together on this ground. And we audio-visual specialists have as much to learn from others as they have to learn from us. What teachers, administrators, and curriculum co-ordinators can teach us will help us just as much in our work as what we can teach these people will help them.

I want to spend the rest of my time taking a look at this big job in which we all are interested, namely, the job of improving instruction. What is its nature? In what ways is the job of teaching made different because of audio-visual instructional materials? Those of us who spend most of our time thinking about these materials sometimes get so wrapped up in our films that we seem to forget what we are up to.

The big job we are all working on involves getting answers to four basic educational questions, and then putting the answers to work. The final word, of course, is never in, but the effort to get the final word is continuous and exhausting.

The first of these questions goes like this: "In what ways do we want boys and girls to be different after we have taught them?" Kindergarten teachers want the five-year-old girl to look at a hen and say "hen," instead of "birdie," or "what is that?" The sixth grade teacher wants the child to write r-e-c-e-i-v-e when the word is dictated, and not write r-e-c-e-e-v-e. or r-e-c-i-e-v-e. The eighth grade shop teacher wants the thirteen-year-old boy to put away his tools and clean up his mess, rather than to leave everything strewn about the workbench as he did at first. A twelfth-grade social science teacher may want a seventeen-year-old upper middle-class girl to enter the school library and take any vacant seat gracefully and comfortably and naturally regardless of the color of the skin of the high school pupil in the next seat.

As we try to decide what boys and girls should learn, what the aims of our instruction should be, we make one tragic mistake. This mistake is in a real sense a result of the way we think about instructional materials. I refer to our common and unrealistic readiness to assume that boys and girls have learned important lessons, have changed in important ways, merely because they have learned to react to words differently.

There is no need to stress at this juncture the effect upon education, at all levels, of our tendency to mistake what seems to be verbal facility for genuine learning. I make this criticism without the least fear of being misunderstood. It implies, of course, no failure to appreciate the tremendous significance of words. We simply could not get along together even as well as we do, were it not for the fact that we can communicate symbolically or verbally. I do not agree with Swift that man would be much better off if all of his verbal communication were to result from chiselling words in granite. This is going too far.

Verbal communication, however, and by that I mean verbal communication that actually communicates, is possible only to the extent that the words employed stand for common meanings. And words do represent common meanings only if they are

rooted in common, first-hand perceptual experiences. For boys and girls to have these experiences requires that all of us use more instructional materials that are not exclusively verbal.

It has been only recently that I have appreciated the tremendous influence of a teacher's ideas about instructional materials upon her notion about what she can teach. Within the past year or so I have asked teachers many questions and have observed a large number of teachers at work. Almost inevitably the teacher who thinks in terms of verbal instructional material will have limited ideas as to what she ought to teach or can teach. Conversely, those teachers who have become accustomed to using a variety of instructional materials—books, pictures, pamphlets, globes, mimeographed materials, charts, maps, motion pictures, transcriptions — almost inevitably try to bring about many kinds of learning in their pupils.

When such teachers are asked what they are trying to accomplish, they do not describe only those outcomes that result from reading, talking, listening, and speaking. Word mastery is one of their objectives, of course, but other types of learning are stressed as well — changes in attitudes, habits, and total personality organization.

If you find it a bit hard to believe that there is this difference between these two groups of teachers, you should try the same thing that I have tried. First, ask teachers with whom you are acquainted about the kinds of instructional materials they use habitually. Then ask them what they are trying to teach. You will learn the same thing that I have learned. A variety of teaching materials means a variety of learning outcomes.

Both common observation and numerous research studies have indicated that whenever a variety of instructional materials is used, boys and girls tend to remember longer what they have learned. In this connection, Edgar Dale, of Ohio State University, gave me an idea several years ago that has resulted in a number of interesting experiences. I make it a point to ask school children and college and university students to describe those school experiences they now remember with the greatest vividness.

If you have not tried this you must. The results especially for people who are interested in extending the variety of instructional materials used, are most satisfying. By far the great majority of pupils and students recall most vividly those school experiences that were concrete and realistic and life-like and tangible, and did not involve exclusive experience with words. When one realizes the very small percentage of school experiences that are audio-visual in this sense, the fact that they tend to be the ones recalled most vividly by the great majority of children, is all the more significant.

After we teachers have made up our minds what boys and girls should learn, we face the second major instructional problem: what can be done to be certain, or reasonably certain, that our pupils also want to learn these lessons? This refers, of course, to motivation. Unless children, too, value and want to work and achieve the instructional objectives, surprisingly little happens. We teachers find ourselves more and more frequently resorting to all sorts of extrinsic motivating devices to accomplish purposes *we* deem important but which are of little consequence to our pupils. We threaten and cajole and coerce boys and girls with grades, with eligibility requirements, punishment, graduation ceremonies and honor rolls, and gold stars, and celluloid buttons. Our pupils develop many types of bad habits and unwholesome attitudes as they strive to win the awards or avoid the punishments without learning their lessons, without working toward the instructional objectives the teacher believes important.

The following statement, presumably made by a seventh-grade boy, in which he describes his disillusionment with school, emphasizes the point I have in mind.

The Poor Scholar's Soliloquy[1]

No, I'm not very good in school. This is my second year in the seventh grade, and I'm bigger and taller than the other kids. They like me alright, though, even if I don't say much in the classroom, because outside I can tell them how to do a lot of things. They tag me around and that sort of makes up for what goes on in school.

I don't know why the teachers don't like me. They never have very much. Seems like they don't think you know anything unless they can name the book it comes out of. I've got a lot of books in my room at home — books like "Popular Science Mechanical Encyclopedia," and the Sears' and Ward's catalogues — but I don't very often sit down and read them through like they make us do in school. I use my books when I want to find something out, like whenever Mom buys anything second-hand I look it up in Sears' or Ward's first and tell her if she's getting stung or not. I can use the index in a hurry.

In school, though, we've got to learn whatever is in the book and I just can't memorize the stuff. Last year I stayed after school every night for two weeks trying to learn the names of the Presidents. Of course I knew some of them like Washington and Jefferson and Lincoln, but there must have been thirty altogether, and I never did get them straight.

I'm not too sorry though, because the kids who learned the Presidents had to turn right around and learn all the Vice Presidents. I am taking the seventh grade over, but our teacher this year isn't so interested in the names of the Presidents. She has us trying to learn the names of all the great American inventors.

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1. This "Soliloquy" first appeared in *Childhood Education,* XX (January, 1944), 219-220.

I guess I just can't remember names in history. Anyway, this year I've been trying to learn about trucks because my uncle owns three and he says I can drive one when I'm sixteen. I already know the horsepower and number of forward and backward speeds of twenty-six American trucks, some of them Diesels, and I can spot each make a long way off. It's funny how that Diesel works. I started to tell my teacher about it last Wednesday in science class when the pump we were using to make a vacuum in a bell jar got hot, but she said she didn't see what a Diesel engine had to do with our experiment on air pressure so I just kept still. The kids seemed interested though. I took four of them around to my uncle's garage after school and we saw the mechanic, Gus, tear a big truck Diesel down. Boy, does he know his stuff!

I'm not very good in geography either. They call it economic geography this year. We've been studying the imports and exports of Chile all week, but I couldn't tell you what they are. Maybe the reason is I had to miss school yesterday because my uncle took me and his big trailer truck down state about 200 miles, and we brought almost 10 tons of stock to the Chicago market.

He had told me where we were going, and I had to figure out the highways to take and also the mileage. He didn't do anything but drive and turn where I told him to. Was that fun! I sat with a map in my lap and told him to turn south, or southeast, or some other direction. We made seven stops, and drove over 500 miles round trip. I'm figuring now what his oil cost, and also the wear and tear on the truck — he calls it depreciation — so we'll know how much we made.

I even write out all of the bills and send letters to the farmers about what their pigs and beef cattle brought at the stockyards. I only made three mistakes in 17 letters last time, my aunt said, all commas. She's been through high school and reads them over. I wish I could write school themes that way. The last one I had to write was on, "What a Daffodil Thinks of Spring," and I just couldn't get going.

I don't do very well in school in arithmetic either. Seems I just can't keep my mind on the problems. We had one the other day like this:

"If a 57 foot telephone pole falls across a cement highway so that 17 3/6 feet extended from one side and 14 9/17 feet from the other, how wide is the highway?"

That seemed to me like an awfully silly way to get the width of a highway. I didn't even try to answer it because it didn't say whether the pole had fallen straight across or not.

Even in shop I don't get very good grades. All of us kids made a broom holder and a bookend this term and mine were sloppy. I just couldn't get interested. Mom doesn't use a broom anymore with her new vacuum cleaner, and all our books are in a bookcase with glass doors in the parlor. Anyway, I wanted to make an end gate for my uncle's trailer, but the shop teacher said that meant using metal and wood both, and I'd have to learn how to work with wood first. I didn't see why, but I kept still and made a tie rack at school and the tail gate after school at my uncle's garage. He said I saved him ten dollars.

Civics is hard for me, too. I've been staying after school trying to learn the "Articles of Confederation" for almost a week, because the teacher said we couldn't be good citizens unless we did. I really tried, because I want to be a good citizen. I did hate to stay after school, though, because a bunch of us boys from the south end

of town have been cleaning up the old lot across from Taylor's Machine Shop to make a playground out of it for the little kids from the Methodist home. I made the jungle gym from old pipe, and the guys made me Grand Mogul to keep the playground going. We raised enough money collecting scrap this month to build a wire fence clear around the lot.

Dad says I can quit school when I am fifteen, and I am sort of anxious to because there are a lot of things I want to learn how to do, and as my uncle says, I'm not getting any younger.

Now this lad is really not much different from other children. He learned most when he was working on problems that were real and significant to him. We teachers often expect boys and girls to spend their time working enthusiastically on assignments that we believe to be important, and frequently we are the only ones in the classroom holding this belief. The results of such teaching are discouraging. We find that about three-quarters of our energy is required just to police the classroom.

So far I have discussed two of the problems that we teachers face constantly: what kinds of changes are we trying to bring about in boys and girls and how can we lead *them* to work to change as we think they should. The third instructional question that must be answered is one that interests you and me greatly. The question goes: "What should these boys and girls *do* in order that they learn what we are trying to teach them?"

The possible variety of learning experiences that the teacher can provide in order that her pupils will learn exceeds the imagination of most of us. The pupils may be asked: (1) to read a book, (2) to listen to the teacher talk (if this is done in college, the talk is called a lecture), (3) to follow the directions in a laboratory manual, (4 to recite in class, (5) to listen carefully to the recitation of others, (6) to write essays or term papers, (7) to listen to the radio, (8) to study a motion picture, (9) to have an interview, (10) to manipulate some model or mock-up, (11) to look at still pictures, (12) to take a trip to a slum area, (13) to spend a summer working in a factory, (14) to study a statue, (15) to do several of these things simultaneously or seriatim.

There are two observations I should like to make about these various types of learning experiences. First, as I said a moment ago, they are means to ends. Reading a textbook is a means to developing, let us say, better understanding of a problem. The latter is the important thing. The text is purely instrumental. Presumably, if better means could be devised to result in the desired understanding, these better means would be employed.

My second observation is that the learning experiences boys and girls have in school are very largely determined — in many cases completely determined —

by the instructional materials that are used by the teacher. These materials define the learning because they define what the boys and girls *do*. Whatever the boys and girls *do,* and are rewarded for, they learn.

I should like to develop this point a bit more completely. There are several ways of finding out what a school curriculum is like. One way is to ask for a copy of the course of study. This, however, may be a poor description of the real curriculum, because the real curriculum is the experiences that the children are having. Another question that might be asked would be to say to the teacher, "What are you trying to teach?" Frequently this helps little, because as everyone knows, the relationship may not be too close between what a teacher says she is trying to teach, and what the youngsters are learning. A third type of inquiry which I have found exceedingly fruitful is to watch what the boys and girls are doing. If we watch what they are doing, we are most apt to find out what they are learning. Boys and girls or teachers, or all others for that matter, learn what they practice.

This means that if junior high school boys and girls studying civics spend all of their time talking about democracy, and reading about democracy, and listening to the teacher talk about democracy, and they are rewarded for these activities, they are learning better how to talk about democracy, how to read about democracy, and how to listen to the teacher talk about democracy.

Now if this is what we mean to accomplish when we teach "democracy" in the junior high school, all is well. But I have never met a teacher who admitted that all she was trying to teach boys and girls was to speak and to read and to listen to ideas about democracy. Teachers usually say that the purpose of their instruction is to teach boys and girls to *behave* democratically. If that is the purpose of the instruction, then boys and girls must be given opportunities to behave democratically and be rewarded for that behavior. In other words, they have to practice learning what the school claims it is teaching.

This basic principle of learning, that the learner learns what he practices, is to a student of the curriculum what a microscope is to a biologist, or the telescope to an astronomer. It suggests a method of observation that is most useful. I have been in secondary school Latin classes taught by teachers who insisted that they were teaching Caesar in order to have the boys and girls appreciate the life and times of the Romans. All that went on in the class, however, was practice in making literal translations from Caesar's Gallic Wars. The children were learning, therefore, to translate Caesar. That is all they were doing.

You and I, too, have visited science classes where one of the major alleged objectives was that the boys and girls were being taught to think scientifically. Now thinking scientifically takes a lot of realistic practice. Yet the children in these science classes were spending all their time filling blanks in workbooks where the problems were set, the procedures prescribed, and the conclusions inevitable. In such science classes, boys and girls are learning what they are practicing, namely how to fill out workbooks by looking up correct answers in the textbook, or by doing some minor Bunsen burner exercises in the laboratory. They are learning very little about scientific thinking, because they were given almost no practice in the scientific solution of problems. When you follow meticulously the directions of somebody else, you are not learning how to solve problems scientifically on your own. That takes specific practice.

As I said a moment ago, no single aspect of an educational program is more influential in defining what the boys and girls actually do than the instructional materials the teachers employ. If the instructional materials provide a variety of experiences, then the boys and girls are practicing a variety of activities, and learning a variety of lessons.

After we have decided what it is boys and girls should learn, and have tried to motivate their learnings, and after we have exercised our maximum ingenuity devising and selecting instructional materials, we still must find out whether or not our instruction has been successful. This is the general problem of evaluation, with which this conference is particularly concerned. Far too many teachers think of instruction as involving word habits only and, correspondingly, far too many teachers limit their tests to verbal tests. The degree to which all of our school evaluation instruments are dominated by attempts to find out whether or not pupils can remember or recognize words needs no elaboration. We have just started to scratch the surface in our attempts to find out whether or not boys and girls understand and can apply what they have learned. We have done almost nothing to find out whether or not their attitudes have changed.

We frequently overlook the fact that the very materials that are employed to instruct boys and girls are materials which provide unusual opportunities for finding out whether or not they have learned. The teacher who uses motion pictures, and transcriptions, and objects, and specimens, and realia in her attempts to teach, is the teacher who is most apt to employ these same materials in order to find out whether or not boys and girls have learned. Conversely, teachers who use verbal materials exclusively test what they have taught with verbal examinations.

The difference between passing an examination that involves verbal facility alone and passing one that really tests what the teacher is trying to teach was called to my attention not long ago. One of the instructors in a progressive junior high school had talked to the boys and girls for a long time about the importance of taking hygienic precautions before eating fruit purchased in the city from stores or fruit vendors. Ever so much was said about the poisoned spray that was sometimes used on apples, and the need for cleaning the fruit.

All of this instruction eventuated in a long paper and pencil test in which the boys and girls were asked questions requiring them to state what they would do and why. The teaching on this verbal level was quite successful because the median score on the paper and pencil test was 82 percent of the maximum score.

Just three days later this teacher, who wanted to find out if she really had taught anything, brought to the classroom a large basket of fruit, which she said she had bought at the A & P Store. At the end of the class she asked the children to help themselves. They dove in without any indication that they were at all apprehensive about being poisoned. There was a large sink in the corner of the room, but none of these youngsters seemed to notice it. They ate apples and bananas and oranges and plums with enthusiasm. All of these children, in a testing situation that involved only words, indicated that they knew what they ought to do, they did *not* do it, however, in a real-life testing situation where the consequences might have been serious.

Most of us fail to appreciate the extent to which the tests we use determine what boys and girls learn. Even though a teacher may say again and again that she is primarily interested in teaching her pupils to think, if her examinations require that they do no more than recall or recognize facts, the boys and girls are going to learn what they must learn in order to pass the examination.

Evaluation and testing are really quite simple, in theory. To do a respectable job, the teacher must first know rather exactly the kinds of behavior changes she hopes her teaching will bring about. Then she must devise testing situations that will make it possible for boys and girls to demonstrate whether or not they can behave that way. The teacher who uses only paper and pencil verbal testing situations makes it impossible for boys and girls to demonstrate whether or not they have learned anything other than the ability to manipulate words.

In conclusion, I want to stress my conviction that every single thing the teacher does in the classroom is influenced by her concept of instructional materials. This should not imply that instructional materials are everything, but, schools being what they are, instructional materials just about define what is being learned in most places.

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The introduction of audio-visual materials into school curricula has enabled teachers to learn something of their value and place in instruction through experience. Some of the general notions which have been developed through actual classroom experience will be discussed in the following paragraphs.

Principles of Utilizing Audio-Visual Materials in the Curriculum

By
F. DEAN McCLUSKY
In, "Audio-Visual Teaching Techniques." Dubuque: W. C. Brown Co., 1949. Pp. 33-36.

Audio-visual materials are most effective when closely correlated with the established course of study or curriculum. Comenius, Rousseau, and Pestalozzi maintained that there must be a close relationship between sensory experience and verbal experience. Particularly, Rousseau and Pestalozzi believed that in the primary grades, teaching and meaning of words should follow sensory experience with objects and things.

When motion pictures and stereopticon slides were first introduced into classroom instruction, the tendency was to organize the slides into sets and to construct a film which would be a complete unit in itself. Due to the novelty of slides and films, the teachers and principals showed the slides and films to large groups of children as an addition to classroom experience. Such visual lessons were looked upon by teachers and pupils more as periods of entertainment than periods of instruction. It was not uncommon for the entire school to be sent to the auditorium for the "visual lesson." Grade lines were broken down and classroom preparation and follow-up were neglected. Children compared these visual lessons with the entertainment to be found in the motion picture theatres, and by comparison, the lessons suffered, for they were not good entertainment. The ultimate result was disillusionment on the part of teachers after the novelty had worn off.

It is now agreed that the motion picture and slide lesson is best conducted in the classroom in conjunction with the regular work of the class and teacher. However, we have also come to recognize that there is a place for the motion picture, radio, and slide presentation for larger groups of children in the auditorium. This is either to furnish enter-

tainment or to supply vicarious experience which may later be called on or referred to in the classroom to summarize or to illustrate lessons previously taught or to come.

Audio-visual materials will not supplant the textbook or teacher, but will supplement and increase their effectiveness. It is not surprising that the invention of the motion picture and its rapid success in the entertainment field should lead many to believe that the motion picture would ultimately become the main source of instructional material in school and that it would supplant teachers and textbooks. Some are now making similar statements about television.

Thomas A. Edison, in an interview with Hugh Weir, which was reported in *McClure's Magazine* for November, 1922, made the following statement: "I believe that the motion picture is destined to revolutionize our educational system, and that in a few years it will supplant largely, if not entirely, the use of textbooks in our schools." In the *Chicago Daily News* for October, 1921, an article was headed by the caption, "Teach It By Movies Educators Now Cry." "This suggestion by H. G. Wells is finally meeting approval." In the *Moving Picture Age* of August, 1921, appeared an article entitled "Preparation for College via Motion Pictures."

As early as 1921, the late Charles H. Judd, formerly Director of the University of Chicago's School of Education, issued a warning in the *Elementary School Journal* (March, P. 6) to those who were outspoken in their statements that the motion picture would supplant textbooks in our schools: "The country has been flooded of late with propaganda material for visual education. Much of this material has been of the cheapest and most sensational type. Some of it has confined itself to the statement of the true merits of the visual method of instruction and will do more for the promotion of visual education of the right kind than will the cheap variety. . . . The most egregious fallacy of the visual educators is that which they make when they try to vend their wares as complete substitutes for textbooks. An example of this sort of thing was perpetrated in a circular which came to the editor some days ago. With various personal data deleted, the circular sets forth its claims in the following terms: 'Whether the screen or the textbook is more desirable and effective in nature-study teaching has just been put to the children in two public schools. One hundred and seventy out of the one hundred and eighty voted in favor of the screen as a choice of methods.' As an educational experiment by a science teacher this seems to be, to say the least, a bit biased. The Monarch butterfly seems to have had a background of the Black Swallowtail, but no credit is allowed

the humble black moth for all the preparation which he supplied for his more brilliant successor. After all, are the visual educators of the Simon-pure type going to gain their point by putting out this sort of stuff? Visual education is too good a possibility to fall into this kind of quackery. The textbook is too good an instrument of scientific teaching to be elbowed around in this way."

Twenty-five years have passed since Edison expressed his opinion that the moving picture would supplant textbooks. Audio-visual materials will never supplant teachers and textbooks, rather they will supplement and aid good teaching.

The most effective use of audio-visual materials is that in which they are treated as any good teaching materials are handled. The mere exposure of children to audio-visual materials will not by some mysterious process teach them. Teachers must prepare students for audio-visual materials in advance and check on them afterwards as they would if they were using good printed materials or texts. It was not uncommon in the early days when slide lessons were prepared for school use to make up a set of thirty or fifty slides which was accompanied by a lecture all written out in advance. When the teacher received this slide lesson from a central depository, all she had to do was to read the lecture accompanying the slides. This sort of canned instruction fell into many abuses.

In the first place, slide lessons were not correlated properly with the course of study and, therefore, there was no particular need on the part of teachers or students to prepare for them or treat them as they would a regular lesson. In the second place, teachers did not feel the necessity for familiarizing themselves with the visual materials before presenting them. To offset the abuses, the Division of Visual Education of the New York State Department of Instruction, in organizing its slide library[1] for use among schools, did not follow the slide-set-pattern and printed its descriptions of the slides in such a manner that it was impossible for the teacher to read off the description of each slide in lieu of a lecture or presentation. The purpose of this was to force teachers to study the slide before use in the classroom, with the belief that such study would result in the more effective correlation of the slides with the course of study and with instruction.

Following classroom experience in which visual materials have been used, the teachers should hold the pupils responsible for the visual aspect of the lesson, as well as the verbal. This kind of check-up results in developing in children a study attitude to-

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1. This slide collection has since been broken up and given to schools in New York State.

ward visual-sensory materials which has been absent in much of our classroom experience with them. A check-up itself should be in terms of the visual materials and very frequently, the testing should be on an audio-visual level rather than on a verbal level.

A few pat illustrations are better than a score or more of less related ones. Many experts of elementary teaching feel that not more than ten slides should be used during a single period. The viewing of a rapid succession of pictures has been found to be more confusing than helpful and to over stimulate the children, rather than to focus their attention upon the essentials.

A picture should have inherent in it enough of value to warrant its study and analysis. The most effective use of stereographs results when a few of them are laid on the reading table to be studied by the students in conjunction with their reading period. In classroom instruction, long motion picture presentations have not been found to be successful. Teachers prefer shorter reels or scenes which illustrate the exact points which the motion picture is best able to present to the class, and they prefer to be in a position to repeat the showing of the film two or three times, if it is deemed necessary.

The inherent nature of audio-visual materials, namely their concreteness, makes it imperative that they be excellent in quality, authentic and accurate. The day is past when any picture, film, recording, radio program or slide may be used in teaching if it has educational possibilities. The novelty of these materials has worn off. Teachers and students are quick to criticize shoddy teaching aids and to notice inaccuracies. Second rate materials suffer by comparison with the excellent technical quality of today's professionally made products which the teacher and student experience in life outside the school.

Misinformation imparted by an audio-visual aid is inexcusable. Great care must be taken to insure the accuracy and authenticity of the subject matter presented. In evaluating teaching aids, the teacher should not hesitate to discard those which are inaccurate and lacking in technical quality.

Expensive audio-visual aids should make accessible in the classroom that which is otherwise inaccessible. It has been said many times that one of the chief functions of audio-visual instruction is to "bring the world to the learner." This statement, like many of its kind, is not to be taken literally. Films, sets of slides, recordings, sets of models, apparatus, et cetera, are expensive. They should be produced for school use in terms of the important segments of life experience which will be of particular value to the student and which cannot be presented in any other way. For example, there is no point in pro-

ducing and using a film to teach arithmetical concepts which employs objects that could be easily made in the school shop or purchased with a few dimes. An expensive set of colored slides on green house flowers would not be of value to students who are accustomed to seeing cut flowers at home, in school or in shops. A recording of a story for little children would be out of place if the teacher is adept at telling or reading children's stories. On the other hand, a film showing the pollinization of flowers by bees meets the requirements, as does a set of slides on colonial life or a transcription dramatizing an episode in history.

No one type or class of audio-visual materials should be used to the exclusion of others. Actual experience in the use of audio-visual aids has taught us much about the various types and their values. Each has its particular contributions to make in instruction. For example, the stereograph is particularly valuable as an individual study experience. The motion picture is effective as an overview or summarization device. The slide provides an excellent springboard for the socialized recitation. Charts and diagrams are especially effective in presenting abstractions and in assisting analysis. An audio-visual "program" based on one type of aid is incomplete and inadequate. Too often schools set up programs on this basis. For thorough, systematic teaching those aids should be employed which are best suited to the achievement of the objectives desired in each instructional unit.

Audio-visual instruction should not be confined to teaching skills and building information and facts. It has demonstrated value in creating attitudes, motivating behavior and in developing morale. The U. S. Office of Education, Committee on Military Training Aids in Instructional Materials, in its report on the *Use of Training Aids in the Armed Services,*[2] states that, "it is in the areas of motivation and the creation of attitudes" that the Committee observed impressive results. (P. 10). And on page 12, the Committee reports that, . . . "it is the extensive use of visual and allied aids for the creation of attitudes which the Committee feels has the most important value for civilian education."

The Armed Services used films, slide films, slides, graphic portfolios, posters and other materials to develop desired attitudes and build morale. In developing the attitude training materials, the Armed Services made extensive use of applied psychology.

The products show a comprehensive grasp of the nature of human motivation and of the techniques

2. *Use of Training Aids in the Armed Services.* Washington: Federal Security Agency — U. S. Office of Education. Bulletin 1945, No. 9. Pp. 34.

applicable to creating incentives. The principles used in merchandising, advertising, war bond, community chest and money raising campaigns were employed. Humor, eye appeal and naturalness were used in addition to hortatory and didactic methods. The implications of these experiences for teaching cooperativeness, loyalty, patriotism, et cetera, in civilian education are clear. Here is an area in which there are great possibilities for research.

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The growing interest of textbook publishers in the production of educational motion pictures, film strips, and other pictorial materials brings into focus the general problem of the relationships among various kinds of instructional materials, and particularly between textbooks and films. For many years, educational administrators have been trying to interest textbook publishers in the production of films which correlate with their books. The late Ben G. Graham, superintendent of the Pittsburgh schools, was particularly active in stressing the desirability of the close relationship between films and textbooks. Representatives of textbook publishing houses left his office on many occasions with this message ringing in their ears.

Films and Textbooks

By
CHARLES F. HOBAN, JR.
Educational Screen. Vol. 24, No. 10. Dec., 1945. Pp. 445-446, 449.

"If a representative of a textbook company should come into my office," he would say, "and tell me that he had not only a set or sets of textbooks that fit into the Pittsburgh curriculum, but also sets of films that correlated with these books, I would immediately give him a serious hearing, and his offerings serious consideration. In considering textbook adoption, preference would be given to the combination of correlated films and books."

Investigations currently being made by textbook publishers, both individually and collectively, indicate that the correlation of textbook and film is approaching the stage where something will be done about it. This, in turn, thrusts upon us the imperative necessity of serious consideration of the relationship between the two and the functions of each. It is not inconceivable that more harm than good may eventually develop out of the close combination of the two, if this combination is affected on a narrow interpretation of the assumption that educational motion pictures are purely supplementary aids.

In the sense in which it is used here, the word "supplementary" means that which completes or adds to something already organized or arranged. Danger lies in the possibility that educational motion pictures will be produced not only within the present organization and arrangement of the textbook, but also within its psychological framework. In this event, the film becomes a celluloid addenda to the textbook, simply adding the element of moving or still pictures to a preconceived and prearranged learning context.

There are at least four psychological characteristics of the textbook as it has grown up in America. The term "psychological" is used because it is assumed that these characteristics influence the reactions of the reader, and therefore, condition the learning experiences resulting from textbook reading and study. They are not necessary to textbooks as such, nor are they equally evident in all textbooks, but these characteristics are more universal in their presence than in their absence.

First, the textbook is impersonal. It is written in the third person, passive voice. Things and events are presented in a cold, factual sort of way. Seldom can the reader identify himself as an individual with the subject matter presented in the textbook. In its impersonal factual presentation, the subject matter remains apart from the reader—a thing, an event, a name, a fact, a procedure outside himself, not a part of him. There is no warmth to a textbook, no feeling, no emotion — just cold, objective intellectual facts.

Second, the textbook is a distillation of subject matter abstracted from the wealth of detail and supporting meaning of its original or present context. It deals only with the bare essence of the subject. As the Harvard Committee says of textbooks in its report on *General Education in a Free Society*, "They sum up too soon. It is right to let a student know roughly where he is going, but wrong to save him the journey. Too many courses tell him throughout what he is seeing, so that he memorizes the account of the trip he never took. His head was buried in the guidebook."

Third, the textbook is intended for individual rather than group study, and the reader is expected to adjust his abilities to the textbook by repeated reading of difficult, obscure, and condensed passages, or by unhurried contemplation of the painted subject matter or by plain "digging." Only with the brilliant reader is the textbook safe for a "once over light." The textbook is designed for repeated reading of short, condensed passages, by the individual student at his own rate of reading and comprehension. The lower the reading and comprehension ability, the more times the textbook passages are to be read.

Fourth, the textbook is generally written by someone who is known as an authority on the subject, or by someone who is known as an authority on

teaching the subject, but seldom by a person who is known for his ability to write clearly, fluently. Occasionally, the ability to write clearly, fluently, and interestingly is found in a person of pronounced scholarship or teaching craftsmanship, but somehow such a person escapes writing a textbook. As a result, textbooks are poor reading.

It is to be understood that these four psychological characteristics of American textbooks are not judged good or bad here. The point is that they are so. The further point is that educational motion pictures should have exactly the opposite characteristics.

In analyzing the functions of motion pictures in education we have made the serious mistake of analyzing the camera and thinking we have analyzed the motion picture. We have failed to analyze the kinds of things that should be recorded by the camera. We have, with our usual academic manner, thought of the functions of motion pictures in terms of (1) motion, (2) slow motion, (3) fast motion, and (4) animation. We have said that motion pictures should be used in education to do only those things peculiar to the motion picture, and we have said that motion, slow motion, fast motion, and animation, are peculiar to the motion picture. We were wrong. They are peculiar to the motion picture camera. We can employ every one of the enumerated functions of the motion picture camera and come out with a motion picture that differs from a textbook only in the form of communication. In character, this motion picture can be exactly the same as a textbook. It can be coldly factual, it can be highly condensed, it can be scholarly but dull, and it will have to be shown repeatedly to be grasped. And, according to our earlier analysis of the function of motion pictures, it will as we say, "exploit the medium."

In the October number of *The Educational Screen*, Mark A. May set forth a different analysis of the functions of motion pictures in education. His analysis dealt with the subjects that motion pictures cover, and the known psychological effects that well constructed motion pictures have on their audiences. This analysis dealt with attitudes and habits of conduct, with information about man's environment and man's efforts and success in coping with his environment, with physical and mental skills essential in modern living, and with feelings, a sense of values, and an appreciation of the good things of life. Quite obviously, motion, slow motion, fast motion, and animation may be used effectively in dealing with some or perhaps all of these subjects, but they are simply devices of the camera, not functions of the educational motion pictures, Dr. May was talking about.

Using Dr. May's analysis as a point of departure, we can easily see that motion pictures which influence the development of values, appreciations, attitudes, and habits of conduct, are motion pictures characterized by personal meaning and appeal, by wealth of detail and a breadth of context, by full and unhurried treatment, spiced with interest and tinged with feeling and emotion. These motion pictures can and should correlate with textbooks, but they do so by rounding out and filling in the kinds of experiences that make learning richer and more meaningful, deeper, and of greater breadth.

Following our counterpoint with textbooks, motion pictures should, wherever possible, be made personal, whereas textbooks cannot be or are not. The use of characters and of dialogue add a personal element to educational motion pictures. Investigations of children's responses to educational motion pictures indicate that the responses are warm and favorable and vibrant when there are characters in the film close to their own age, close to their own economic and cultural status, and of their own sex. Boys attend best to motion pictures in which boys of their own age have a part; and girls respond as characteristically to girls. For another thing, children expect the characters in the film to talk in the film. They crave live dialogue, only too frequently to be fed on commentation of a male adult. Even when dialogue cannot be used for various reasons, and there are such reasons, the commentation can and should be made more informal — more personal — more in the language of the audience instead of the language of the adult speaking through the textbook.

Second, films should reflect the details and context of the subject, not merely set forth the end-result generalization. It is the business of the film to show, not to conclude, to summarize, or to interpret. Nothing is less satisfying psychologically or educationally in films intended for or used in schools than the camera approach to the subject, only to have the picture whisked off the screen while the commentator disposes of the scene with the deadly finality of a one-sentence generalization. The audience never gets to see the sights and only hears the hurried reading of the guidebook. Educational motion pictures fail in their function if "they sum up too soon." The summing up is the function of the audience, under teacher direction. The textbook is a medium helpful in this summing up. The pictures can be verified against the textbook, or, more appropriately, the generalizations and interpretations of the textbook can be verified against the film.

Third, educational films should scrupulously avoid condensation — packing more material into a film than can be absorbed by the audience in the running time of the film. Education films, unlike textbooks, should be leisurely. To most children, an

educational motion picture is more of an emotional than an intellectual experience. To try to make it a purely intellectual experience by making the film less emotionally satisfying, is to try to change human nature. Psychologically, intellectual activity comes after the film experience — in the discussion and analysis of the material presented in the film and from the study of the textbook in the light of the experiences supplied through the film. Over and over again it is found that when two educational films are available on the same subject, the one a highly condensed ten-minute version, and the other a more leisurely longer version, the longer, more leisurely version is more widely used than the shorter, condensed version. Textbook condensation in a motion picture simply is not wanted by teacher or by students. Furthermore, while it is often desirable and enjoyable to show an educational film twice or more to the same audience within a few hours, days or months, it is a mistake to produce educational motion pictures that *must be shown twice or more* to compensate for over-condensation of subject matter in the film, and the extreme brevity with which the scenes remain on the screen for audience observation and reaction. The principle of repeated showing is a textbook principle inapplicable in the main to educational motion pictures if motion pictures are to be made really educational.

As the fourth counterpoint of the textbook and the film, it is almost axiomatic that educational motion pictures should be produced by professional film producers, not by subject matter specialists or specialists in teaching the subject matter. Both these educational specialists are indispensable to educational motion pictures — but their service is in the beginning planning, the technical supervision, and the final approval for accuracy and teachability, not in the professional end of motion picture making. Good educational pictures require professional motion picture writers, directors, cameramen, and editors and commentators. The translation of subject matter and teaching method into an educational motion picture is the job of the professional motion picture producer, rarely of the professional scholar or professional teacher. Professional motion picture talent adds to the subject matter and to the technique of its presentation a quality — a craftsmanship — which captures and holds the undivided interest of the audience, gives life to the subject, and increases the motivation, the impact on attitudes and habits, and the enduring nature of the learning for which motion pictures are famous as a medium of both entertainment and education.

Considered in the light of these criteria, motion pictures become basic educational materials, not merely supplementary aids which illustrate the textbook.

They supply a basic stuff of experience and learning. The textbook, on the other hand, supplies the material by which this experience and the learning are intellectualized, integrated, and extended.

Most of what has been said here has been said before in other ways and in other places. More important, it has been put to the test on a broad scale in the training programs of the armed forces. In the early days of the war training program, both the Army and the Navy made films which were little more than motion picture versions of their textbooks, with a paragraph by paragraph correlation. As the training program progressed there was a marked change in the nature of both the films and the books. While they correlated one with the other each assumed its own character and was written and produced to do what each did best. The paragraph by paragraph correlation of the textbook and the film gave way to correlation of subject matter only. While both the film and the text covered the same subject matter, they took entirely different approaches and used entirely different treatments. The textbook became the pocket reference book, supplying the essential data. The film became the human document which gave life, and meaning, and application to these essential data. Training films were made as motion pictures on the subject, and textbooks were made as textbooks on the subject. Neither tried to duplicate the other. They were made and used as a team working together toward the same goal, but each doing something different.

It will be a mistake if we don't learn what kind of a team can be made out of textbooks and films, put each to the job it does best, and let them work together in their different ways to a better education in post-war days.

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I should like very briefly to present a few incidents which have happened to me in my own teaching experience to prove the need in modern education of giving the child something more than meaningless words to juggle with. Under the old education it didn't much matter whether the child understood or not the lesson he was intoning, — just so he repeated the facts and figures which he had memorized with satisfactory speed. Those were the days of "vague words, dim conceptions, and inexact abstractions."

Why Visual Aids?

By
ANNETTE GLICK BYRNE

But since then we have come to realize through psychological studies, that words in themselves are not a single means of transmitting thought. In them-

selves they are not the channels for the supply of concrete experience. We have come to see that words, whether they are printed or spoken, are only a sign, — the symbol for an idea which has already been placed in the mind as a result of some real (or sensory) experience.

I may try the experiment of Dr. Ernest Carroll Moore, who for years used to spring on his students the perfectly acceptable word, "thrasonical," and then ask its meaning. The word itself was only an empty sound, for no student, ever, was found who had already placed in his mind any concept which gave that word meaning. The sound of the word itself was only so much noise.

In like manner I may use the word "dubaronical" which doesn't appear at all in the dictionary, but in my own mind it stands for a definite image, — the word is a symbol of a certain very clear idea to me. It means something very "katish," — that is quite "ultra-ultra." If I happen to meet some other person who matches my word concept with his own word concept when I say, "That dress you have on is very dubaronical," then we may talk together with real understanding and communion of spirit.

Under the old education we paid very little attention to whether the child *understood* the words which he was reading or reciting. We didn't concern ourselves as teachers with means of insuring that ideas and images were placed in the mind by means of sensory experiences which alone could give words real meaning. It was John Dewey who said if nine-tenths of the energy spent in learning were spent in seeing that the proper images were formed in the child's mind, the educational process would be enormously speeded up and made more effective.

In my own teaching experience I have had several amusing experiences resulting from instances where the child had failed to match up the correct mental concept with the word which stood for it. These are familiarly known as examination paper gems or "boners," but these that I want to tell you now have actually happened to me or have been repeated so often that people are telling them back to me now. They have gone the rounds.

One youngster asked me if Nero was the same God as Nero in "Nero My God to Thee!" Another one stated that Louis XVI was "gelatined" in the French Revolution. The classic is a statement in a composition that Anne Boleyn, one of the wives of Henry the VIII was "ironed on." When the teacher traced that elusive statement to its source in the textbook, she found that the book read, "Henry the Eighth pressed his suit against Anne Boleyn." Sometimes, however, the concepts in the youngsters' minds are richer and more varied than our own, or that we

give them credit for. Not long ago a student of mine at Venice High School was asked to state what the Golden Fleece was. He replied brightly, "Sunny California." Since this was in the midst of boom days, I have to confess that I marked the paper correct! So I might go on, multiplying these forever. You have heard of the student in college who said that "flora and fauna" were two chorus girls.

Funny as these stories are, they nevertheless emphasize the need for something more in the learning process that the mere jugglery of words by which one word is used merely to define another. What clear idea, for instance, does the child have of the papal bull, or the line of demarkation? How will we describe to the child from the dust bowl, using words only, the rolling waves of the sea, or to the child from the rolling prairies, a carpet of pine needles?

So the old education was an encyclopedic, memorious, recitative method, only concerned with the accumulation of a vast store of unrelated, isolated facts where memory alone was identified with study. A recitation was what it was named, — a "re-citation," and the sole criterion of good teaching was the silent and inert child in his seat, feet flat on the floor, and hands folded, where the highest form of activity known was the hand raised in the air and the voice asking timidly, "Please, may I speak?"

In my own schooling, back in the middle west high school, I was an A-plus student. I knew Burke's Speech on Conciliation and Washington's Farewell Address by heart. I could recite the dates for the admission of all of the states. I could stand on my head and recite them backwards. The ablative absolute, the hypotenuse of the triangle, and the cube root were all duly indexed and classified. But though I knew my lessons and could give them lip service, I *understood* very little of the lessons of life, or good citizenship. For one thing, I failed until very late in life, to take opposition, without girding my loins for the fray, without having an impossible combativeness aroused which blinded me to logic, rationality, and conviction. At long last, I hope I have learned, when opposed by someone legitimately and reasonably, to project myself through imagination into the other person's mind, to see things with his eyes, to get his point of view. This is tolerance, one of the essentials in any democratic government and of tolerable living together.

These lessons, along with the purely factual, are learned by modern children, for in the modern schoolroom there are *things* — tools to work with; there are opportunities for sensory experiences which alone enrich the word and give it meaning, and there are opportunities for working together and for give-and-take. Miss Corrine Seeds, principal of the training

school at the University of California, Los Angeles, showed me a small piece of writing which an A6 student had written for the school newspaper. This was it, "While the upper grades are lost in the world of growing up, there is another world, a smaller one, on the other side of the yard. It is the nursery school, where the small children are taught to live together without quarreling."

So we may say that education is going through a revolutionary period of change. On the one side is the old formal education, the "hell-fire and brimestone method," to use one of Superintendent Lanes expressions, where facts were learned for their own sakes, and where children were given few opportunities to see and hear and experience things with their senses and with their emotions. This was the old listening school.

But in contrast to it, we have the seeing, doing school where the doctrine of interest is opposed to the old doctrine of difficulty. This is the school where the concrete experience is the basis of all effective learning, where if the child from the dust bowl cannot be taken to see the rolling waves of the sea he sees a motion picture or studies lantern slides and study prints and stereographs so that he may understand what he reads about these foreign and strange things in his books.

And the child is anything but bored today with school. He is interested, absorbed in the worthwhileness of the thing he is doing. Neither is the teacher a passive instrument while a motion picture is being shown. The teacher with these improved tools of teaching is a better teacher, more active, more effective, more interested herself in sharing and directing these vital learning experiences. My own teacher friends will universally testify that the skill necessary in the modern schoolroom far exceeds that necessary under the old formal memory system, because children are *living* while they are learning.

A significant experiment was tried by the child psychologist, by the scientific testers who wished exactly to determine, without surmise and hypothesis entering in, just how much interest had to do with effective learning. Among other experiments these Gestalt phychologists, as they are termed, wished to find out whether apes when they were interested, could learn more and learn faster and more effectively.

Outside the cage of an ape which had been kept hungry, they threw a ripe succulent banana. They put inside the cage several sticks with large ends and small ends which had to be fitted together in such a way that the stick would be made long enough to reach outside the cage to the banana. After some

effort, trial and error — failing but keeping at it, the ape finally fitted the small end into the large sufficiently to make a stick long enough to reach the banana.

Now what did the ape do? The natural supposition would be that immediately the ape ate the banana. But he did not. He gave the appearance of being so thrilled with the satisfaction of learning, of having conquered a difficulty, of having progressed mentally, and physically in muscular adjustment, that he proceeded to pull the stick apart, throw the banana outside the cage, fit the stick together again, poke the banana inside the cage, and repeat the process until the thrill of learning had subsided! Then and only then did he eat the banana.

So we know that opportunities offered the modern child for activity, for the real experience interest him mightily. There is a new glow surrounding the things going on in a modern school room. There is the satisfaction, even exhileration which comes from a sense of mastery, of achievement of getting on.

Visual aids mean not free movies which some persons wrongly suppose. They are simply the tools by which the child is given a real experience. A child studying communication is supplied with a telephone receiver which he may take apart to discover the magnet and so learn by direct experience, the magic of magnetism. Or a child studying wool may take a wool-card and actually card the tangled fibres or raw wool, and so learn through the muscles as well as the eyes the difficulty of pioneer living.

Objects, specimens, manipulative models, lantern slides, stereographs, colored charts and motion pictures both silent and sound are supplied as tools of teaching, to accompany the always indispensable book and give it life and meaning.

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During the past few years visual education has advanced further and faster than in the previous twenty; and this very fact may bring about mistakes, misunderstandings, and misuse of these tools as educators adapt them to their instructional programs. Many questions are raised in this process of adaptation, and much depends upon the answers that are found. Which kind of projected materials shall we use in our schools? Shall we buy film strip projectors? Shall we buy motion picture projectors? Should we purchase equipment to make disc recordings, or should we purchase a magnetic wire sound recorder? And once we get any or all

Communicate What to Whom and Why?

By
PAUL C. REED

of these things what shall we do with them? How should they be used in our classrooms? These are not new questions that are being asked; they're the same old questions. But the difference is that more educators are now interested than ever before; more are asking questions, and the answers may seem to be more complex.

This is a time for clear thinking if school funds are not to be wasted, if we are really going to advance and improve our classroom instruction, and if we are going to use these newer tools in a way that will realize their tremendous potentialities. It might help to bring about clearer thinking if two words were brought into clearer and sharper focus in relation to audio-visual thinking. Those two words are "communication" and "curriculum." These two words demand greater consideration by all who are concerned with audio-visual instruction; by the producers, by distributors, by school administrators, and by teachers in the classrooms.

Too many people stop their thinking about audio-visual instruction at the equipment level. They think of the equipment as an end in itself. They concentrate on the careful selection of equipment. They maintain it in the best of condition. They make sure that teachers and even pupils know how to operate it and to keep it oiled. They know all about the latest equipment developments. They know which machines are best and why. They're the "visual gadgeteers," and there are too many of them.

Then there are the "quantitative visualists." They are not particularly concerned about the equipment. They're concerned about the pictures on the screen; in fact the more pictures shown, the better the program. They believe in visual instruction and lots of it. They show pictures all the time, and they just show them and show them and show them. They'll tell you how many records they've used and how many radio programs they've listened to. They can give you the quantitative statistics, for that's what they're interested in.

Neither the "gadgeteers" nor the "quantitative visualists" have considered the word "communication." They think of the equipment and the picture or sound program as ends alone. They do not think of the equipment and materials as *means* to ends, as

the tools and the means of communication. "Communication" is the key word. Once we think of audio-visual materials as a means of communication, it provokes a most important question — "Communicate what to whom and why?" That question must be sincerely asked and completely answered before a good visual program can be developed in a school, or before there can be good instructional use of audio-visual materials. The actual completed communication of educationally significant experiences by audio-visual means is the test for effective audio-visual instruction. The concept of audio-visual materials as a means of communication must be basic to our audio-visual thinking and planning.

The question, "Communicate what to whom and why" is equally important for producers of audio-visual materials for classroom use. Too many classroom pictures have been made just because the footage was already available or easily photographed; or just because the subject would make a good movie. The great success of the Army and Navy training film program was largely due, I believe, to the fact that they knew definitely and conclusively who were to be trained by the pictures, what the trainees must know in order to do their jobs, and why it was necessary for them to know and be able to do these things.

The answer to what should be learned in school classrooms and why, *is* the curriculum, and the curriculum must be the starting place and the focal point for any audio-visual program if it is to be effective. This concept must also become an integral part of our audio-visual thinking. Decisions as to which pictures should be seen and heard, and which sound experiences should be listened to, should not be made in terms of the audio-visual materials alone. The film isn't the starting point for visual thinking; the curriculum is. There may be justifiable instances, in school situations where current curriculum is outmoded and does not meet learner needs, when modern audio-visual materials can be used to bring about a rethinking of what should be learned by whom and why. But this is not a healthy condition; at best it is expediency. Curriculum thinking should precede audio-visual thinking, and the selection and use of audio-visual materials — the means for communicating essential learning experiences effectively and efficiently — should be curriculum centered.

II Audio-Visual Teaching Materials and Their Use

A. UTILIZATION

We don't build images for anybody; each individual must build his own. What we as supervisors and teachers can do is to train our students so that they will be able to form and develop clear, exact and definite images. This can best be accomplished by training youngsters in observation, analysis and interpretation — procedures in which visual aids may be of invaluable assistance if carefully selected and correctly utilized.

Building Mental Images

By PAUL T. WILLIAMS
The Nation's Schools, Vol. 42, No. 6, Dec., 1948. Pp. 54-55.

Teaching pupils to form images should begin in the very first years of school. We know that children are highly imaginative. The alert supervisor capitalizes on this truism and sets as one of his goals "the training of each child in the ability to form correct and definite mental images." Simply permitting the child to "look" at pictures will not contribute much, if anything at all, toward meeting the ultimate objective of forming correct and definite mental images. Indeed, such a procedure is likely to produce in the student's mind images which to him are clear and accurate but which the trained mind knows, from previous experiences, are likely to result in inaccurate distortions of the true image.

Mere exposure to pictures is certainly not enough! Previous experiences of the student plus thoughtful effort brought to bear on observation, analysis and interpretation of the picture will determine what the student will get from the picture.

The place to begin is with observation. Visualizing is a mental act. It involves the use of mental functions. It demands more than the mere physical act of the eye on the picture. The images formed in the mind result in a re-creation or rebuilding of the picture observed and directly reflect the student's ability to observe accurately and clearly. True visualization is imagination. This imagination is the ultimate end toward the development of which visual aids should be thought of as means to that end.

As occasion merits, visual aids should be used as an approach to an understanding of a truth and as illustrations of a general statement, but the super-

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Some Guiding Principles

1. Select your teaching aids on the basis of whether or not they seem to have potential educational significance toward meeting your specific objectives.

2. Remember that most people have five senses. Utilize as many as possible in your teaching.

3. Fit the teaching aid in when and where it is needed.

4. There are particular teaching aids for particular purposes. Do not use one aid to the exclusion of all others.

5. Select other supplementary teaching materials in addition to the one you consider basic.

6. Prepare yourself and prepare your students before using the teaching aid.

7. Approach the teaching aid as a laboratory exercise.

8. Locate in a picture the major center of interest; observe each feature separately; strive for an orderly analysis.

9. Stimulate interest and direct responses so that they lead to student creative activity.

10. Aim at providing for correct inferences and reflective thinking on the part of the students.

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visor must not forget that the development of thinking is paramount. This can be brought about only through the ability to form exact, clear and definite images. The student's ability to direct and keep his attention upon a problem or a physical object is an indication of a trained mind and a thinking individual.

From the beginning of man's presence on earth he has been seeking devices that would stimulate interest and assist the imagination. Imagination demands proper food with which to work and function.

Every good teacher is always searching for devices which will make the work of the classroom more meaningful, more realistic, and which will develop thinking and imagination on the part of his students. In the carrying out of these objectives visual aids excel as a means to an end.

The selection of visual aids for the specific purpose of stimulating the imagination should not be

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confined to those aids that are solely of a mechanical nature, *i.e.* when projectors are required in presenting the visual aid to the students. Visual aids should be chosen on the basis of whether they will do a specific job at a specific time rather than on the basis of type of visual aid.

Not only should visual aids be authentic, accurate, truthful and significant but also they should be simple in organization and construction. The simpler the visual aid the better. This statement applies to the selection of visual aids in all subject matter areas and on all levels of instruction.

The teacher of the child in the nursery school or in the kindergarten can use to good advantage such visual aids as simple pictures, fairy tales, nursery rhymes, imaginary play, simple dramatizations. She will capitalize upon the child's natural curiosity concerning things about him. The alert teacher develops this wholesome curiosity into vivid and realistic imagination.

The exploration of new places, interest in animals and flowers, the telling of stories, and the like are all excellent aids for the teacher to use with both primary and intermediate grade children. Thus the child begins to differentiate between the real thing and imaginary things. We capitalize on his interest in asking questions and assist him as he tries to understand the world about him. We direct his attention to the frequent great differences that exist between the "real" thing and somebody's idea of the same thing as expressed in a drawing, a model, or some other medium of graphic presentation.

As the child grows older we should steer his creative urges in the direction of projects of the constructive type. Such projects assist the child in developing his imagination through the application of realistic practices.

All the suggestions and direct assistance that supervisors can give to their teachers will do little good if the teachers lack the interest, enthusiasm and ability needed to develop and carry on an educationally significant program of visual instruction in their classrooms. If the same teachers were presented with all the various types of visual aids pertaining to their specific problem that could possibly be obtained, this condition would be no guarantee of fruitful results with respect to the students' increasing their sum total of knowledge or their ability to think clearly. With all due credit to what visual aids can accomplish, they are only as good as the efforts made by the teachers using them!

The teacher must know WHY she is using the specific visual aid that she has chosen, for only she knows the specific objective she wishes to meet. The teacher must also know WHAT she expects her class to get from the visual presentation that she is planning.

It is imperative that the student be told by his teacher why the visual aid is being used, what he should get out of the visual presentation in terms of questions and problems, the answers to which lie potentially in the visual aid as presented to the class. If these simple laboratory type of procedures are not followed, the lesson is likely to degenerate into a rest period for the teacher and a recreational period for the students. If visual aids are to be thought of as pure recreation—don't use them in the instructional work of the classroom. If they are to be used at all [as recreational], project them in the auditorium where they belong.

Visual materials such as objects, specimens, models, charts, globes, maps, blackboards, sandtables, prints, films, slides, filmstrips, field trips, and the like will undoubtedly be brought into use at one time or another in clarifying the daily lessons.

All of these visual aids and many others, if properly used, will ultimately assist in the direction of training students to think and to form clear, exact and definite images. Although the teacher may be using one visual aid to teach contrast or comparison, another as a basis of a discussion, and still another to illustrate a particular point, they will do much if presented properly toward training the child in the abilities of observation and analysis without which true visualization is impossible.

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While the past few years have seen rapid progress in the use of audio-visual aids in classrooms, factors indicate an even greater use of these devices in the years immediately at hand.

Among these factors are: the apparently sound results of using audio-visual materials for speeded up teaching in the various branches of the armed forces;

Classroom Is Place for Audio-Visual Teaching

By LEO R. MILLER
The Nation's Schools, Vol. 38, No. 1, July, 1946. Pp. 58, 60.

the exposure of many former teachers and administrators, men and women alike, to the advantages of these technics while members of the armed forces; the increasing number of film and record centers organized in state universities and teachers' colleges; and, finally, the releasing for use in schools with inadequate financial resources of many thousands of dollars worth of excellent equipment used by the armed services. Even conservative observers might expect to see the use of films, recordings, public address systems and radios

in our schools increase rapidly during the years just ahead.

Where Shall Films Be Shown?

When the establishment and maintenance of an audio-visual program in either an individual school or an entire system are agreed upon, an immediate and pressing problem is: "Where shall these films be shown or the radio or recordings be used in each individual school unit?"

Generally, it would seem that an administrator and building staff might choose either one of two locations, with possible modifications, namely, the individual classroom or the auditorium, playroom or other general assembly center in the school.

Obviously, certain advantages and disadvantages are attached to the use of either place. But it is my opinion, after nearly fifteen years' experience in using the commoner forms of audio-visual aids, that the individual classroom is the more logical place for using audio-visual devices.

Briefly, the disadvantages of the auditorium type of visual lesson are:

1. The lesson ceases to be a lesson and becomes a show. The theater-like atmosphere encourages this attitude on the part of most pupils.

2. Blackboards are almost always absent. I have found it advantageous to be able to stop the machine, turn up the lights and elaborate on some misunderstood point by making blackboard sketches. Incidentally, the technic of blackboard use might be worthy of a course in summer schools, if not already offered.

3. Textbooks and maps are usually missing in the auditorium. Frequently, points of misunderstanding can be cleared up in a few seconds by turning on the lights and allowing pupils to refer to texts, dictionaries or maps.

The advantages of using the classroom as an audio-visual laboratory are, of course, the reverse of the foregoing disadvantages.

The classroom is the logical place to use audio-visual devices since the other aids to learning are present there also. The disadvantages of using the classroom are:

1. Every teacher has to be trained in the use of the equipment.

2. The equipment has to be moved frequently, which increases the chances of breakage.

3. Considerable expense is involved in equipping each classroom in the school with screens and opaque shades.

Let us consider each of these in turn.

1. Any teacher who can learn to operate an automobile or an electric sweeper should be able to use audio-visual aids, including the more elaborate sound equipment. As a last resort, principals, custodians or older pupils might handle the equipment.

2. Reasonable care and the appointment of reliable monitors will keep breakage at a minimum. This is not a minor detail, with replacement parts still difficult to get.

3. I have had the experience of obtaining equipment for two elementary schools of average size within the last four years. In both instances I found that the cost per room, instead of being prohibitive, was extremely reasonable.

In one classroom five fairly large windows were equipped with heavy blackout shades at a cost of less than $20. This money was obtained from the sale of waste paper gathered in salvage drives. The present screen is an old, out-dated map, reversed and suspended from hooks in the molding. When not in use, it is rolled up.

The use of these two simple expedients jumped the use of visual aids by the teachers of these two schools by several hundred per cent. Teachers who refused to take children into the auditorium turned to visual aids enthusiastically when their own rooms were equipped for visual aid teaching.

Recently, Rupert Peters, director of visual education in the schools of Kansas City, Mo., stated that the only central site for using visual aids he would favor was one containing the books, maps and globes required of every grade using the room, plus blackboards and bulletin board space. With all these at hand, he said, he still would favor the individual classroom as the ideal audio-visual laboratory for school children.

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The movie projector is ready. The class comes into the room and gets seated. There is chattering and the noise of books, desks, and feet. When the chattering is halted by the teacher, and all faces are towards the screen, the teacher moves to turn out the lights. The room becomes dark and the moving picture on the screen unfolds the story of the Mississippi River. For a period of twenty minutes the moving images, music, and commentator's speech relate a stirring episode of a segment of American life. It presents new words, sounds, sights, ideas, and problems to the audience. It has a great fund of information, and the impact on the emotions of the class is real and forceful.

The teacher, sitting in the back of the room watching the film and class, thinks—

"Ay, There's the Rub"

BY
CHRISTOPHER R. VAGTS
Audio - Visual Guide, Vol. 16, No. 2. Oct. 1949. P. 13.

". . . this is a wonderful film for the children to use . . . riverboats . . . the floods . . . Feels nice to sit down for a change . . . don't have to talk and shout . . . C.C.C. . . . reforestation. I'll use this with 9B8 tomorrow. They'll like it . . . Reel almost finished . . . erosion of the land . . . 15 minutes till lunch bell . . . THE END . . . get the lights."

The teacher puts on the lights; the children blink their eyes, and noise springs up all over the room. The teacher's clapping of hands restores order and the class awaits the teacher's directions. "Now class, open your English workbooks to page 46 and let's review the main points of using the comma when there are words in a series." Workbooks come out and pupils begin spraying commas onto the printed pages. The bell rings a little later and the class is dismissed.

"Why tell me that story?" you ask. Because, this is a story of waste and misunderstanding that is being repeated in our junior high school and almost every other school in the United States every week. It is a story of lost opportunities, a story in which almost all of us played the part of the teacher. It is a story of our misuse of films, our misunderstanding of their limitations. Let us DO something about it.

What is wrong with the teacher's use of the classroom film? What is he forgetting about films as teaching devices? The teacher is forgetting that a film is only an audio-visual AID. It is a device that provides a vicarious experience through a picture that moves to the accompaniment of a sound track. The magic about a film is its appeal to people. But NO FILM CAN TEACH BY ITSELF. If we are aiming at effective learning through films, we must prepare the class for the film.

Instead of just flipping out the lights when the class quiets down, we should introduce the film, point out the general area of the subject-matter treated, put an outline or a list of important words on the board, and then get the class geared to look for the things we want the film to bring out. The techniques used to achieve this will depend on the individual teacher. Only when the class knows what to look for, should we let them look.

When the film is over, let us spend some time recalling the points we set forth in our preparation. Let us talk over the things that puzzled or interested the class. Let us find a springboard for subsequent activities that will be valuable to the class and to particular individuals in the class. Here scrapbooks, diagrams, charts, slides, graphs, reports, and other projects enter the picture.

"Sure, sure—that sounds great on paper, but how can I prepare the kids for the film when I don't get a chance to see it myself?"

"Ay, there's the rub," as Hamlet said, but do we throw out films as effective devices because there is little time for previewing? Here are some practical suggestions to overcome this difficulty.

1. Consult your fellow teachers; they may have used the film before.

2. Ask your visual-instruction director about the film. He has probably seen most of the films in the school library and can give enough information for you to work on.

3. Consult the film handbook if one is available for suggestions.

4. Volunteer to help make annotated cards for the films in the school film library. Each card could have a synopsis of the film, good leading questions, and comments by previous users. Your visual-instruction director is probably just waiting for help to get such a project under way.

The film can help you to teach, but used alone without preparation or follow-through, it is little more than wasted time and effort for you and your classes.

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Many schools which have never used films before are now beginning to use them. There are many physical problems which retard correct use of films by teachers. Teachers are forced to devise methods of use which although not ideal are at least a step in the right direction, and worthy of consideration by others in similar circumstances.

Do the Best You Can With It!

By PAUL V. MULLIGAN
Audio - Visual Guide, Vol. 15, No. 9. May, 1949. P. 15.

It is not always possible for the teacher to prepare the class properly, nor to preview the films being used, nor to get the right film at the right time. For many schools, the rental library is the only source of films. Film libraries, because of the great demand upon them, are not always able to furnish requested films on certain dates. Substitute films are furnished as a result, and the monthly plan of teaching is altered to fit the subject-matter to the film, rather than the film to the subject-matter.

A visual-aids director is powerless to do much in this situation. Teachers who have become accustomed to teaching a unit on New England in October, and are on the Far West in January, do not take kindly to the suggestion of switching dates. Even if the teacher is willing to make the change, the supervisor or principal may not agree. Consequently the children may see a film on the Far West when they are studying New England. This sort of occurrence is hard to avoid in setting up a visual aids program.

The film producers offer the suggestion that each school buy its own films. Very good indeed, but

how? Funds are lacking. A partial solution is long-range booking. The teacher can, from the previous year's plan book, determine in advance the time when a desired film will be needed.

The following situation is common in schools attempting to use films for the first time. The film will arrive at the school for a single day's use. Teachers who think they may have use for the film have never seen it until it is being projected. The film may be perfectly good in subject-matter and may fit the classroom work then being done. It may deal with a subject which has just been taught or may be taught in the near future. What can the teacher do to make some worthwhile use of this film?

While the film is being shown the first time, the teacher should make a series of notes of the content of the production. Immediately following the showing he should prepare questions from the notes, calculated to teach important points in the film. The questions should provoke a discussion. After the content of the film has been discussed, it should be shown again. The questions between the two showings will have served as motivation for the second showing.

Programs cannot be built by thinking only in terms of the ideal conditions which we should have in our educational systems. Teachers must be resourceful in meeting conditions as they exist at the moment. We must do the best we can with what we have. Each succeeding year we can improve our procedures until eventually we reach our goals.

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B. BLACKBOARDS

For some unknown reason, nearly everyone in the educational field has come to associate the term "visual aid" with something electrical—slide and movie projectors, opaque projectors, etc. Yet, one of the very first real visual aids used in schools—long, long before the discovery of electricity—was the well-known chalkboard.

The Chalkboard —A Neglected Giant of Visual Education

By
WILLIAM R. SPRENGER
Audio - Visual Guide, Vol. 18, No. 6, Feb., 1952. Pp. 7-8.

Looking back through the years, you could trace the use of the chalkboard—or "blackboard" as it was known a decade ago—back to the days when every student carried his own slate. The chalkboard gradually assumed such importance as a teaching aid that all available wall space in the classroom was allotted to "blackboards."

There was a time when the chalkboard was the principal means of conveying written messages to students. It served as the visual means of presenting the entire course of study. It became the "work table"

where the individual student demonstrated his ability before the watchful eyes of his classmates. It was the greatest single teaching aid of the times. Without a doubt, the chalkboard has been the fore-runner of all modern "visual aids" as we know them today. In spite of today's electronic marvels, the chalkboard remains one of the most versatile visual aids found in the classroom.

The chalkboard has kept its place in our modern teaching program because it is so convenient. It's always ready to use. No set-up, no moving from room to room, no danger of mechanical failure, no special equipment is involved. Always handy—it is ready to use the moment the need arises.

Using the chalkboard requires little training. It's a natural—everyone can use it. The average child is introduced to the chalkboard when he receives his first toy blackboard. The chalkboard continues to play a very important part throughout his entire educational life even in college.

The chalkboard lends itself admirably to the treatment of specific individual instruction problems. It is one of the few visual aids adaptable to the demonstration of a progressive solution of a problem. It lends itself to the use of handwriting, lettering, drawings, charts, graphs, maps, etc.—all of which may be altered, changed or modified to suit the individual teaching requirements. Colored chalks further increase the chalkboard's effectiveness. Dramatic, over-size drawings and figures make the demonstrations easier to understand.

HOW TO SELECT THE RIGHT KIND OF CHALKBOARD

The modern chalkboard is a tremendous improvement over the faded, gray slate boards of yesterday. Modern production methods control the quality of writing surface, backing board, and color. The chalkboard found in today's new schools has a rigid backing made of cement-asbestos, hard pressedwood fibers, or other suitable material that will give the necessary smooth base and maximum strength. This backing is covered with a moisture-resistant coating and a special compound that provides the smooth writing surface.

A good chalkboard will not absorb moisture. It should have a permanent base and a glare-free, non-reflecting surface. It must be easy to install. It will not accidentally break, chip, splinter, or shatter.

The type of board you select depends entirely on your personal choice and budget. A cement-asbestos board gives the greatest permanence and the best writing surface. It requires the least attention for maintenance throughout the years. A very satic-factory, yet inexpensive, board is the one with a fibre-pulp backing.

The writing surface you select must have just the right amount of "bite" to assure easy, noise-free writing and good, contrasty characters. The surface must be free from all imperfections.

To give the proper service, year after year, your chalkboard panels should be mounted on either a smooth, plastered wall or on suitable wood grounds recommended by the manufacturer. Satisfactory installation can be made by cementing the board with special mounting cement, or by nailing the edges. In any case, a good moulding should be used on all sides.

Choosing Your Chalkboard Color

Research in modern color dynamics has made great strides in improving the appearance of chalkboards. For years, black was the only color used because it was the natural color of slate. Then came dark greens, browns, and a host of other colors soon to be dropped.

After the last war, considerable research uncovered the most effective color—a light green. This was quickly recognized by school authorities as the scientifically correct color they had been seeking. Each manufacturer gave this new green his own trade name.

Light green furnishes a strong contrast with the white chalk-markings and provides maximum visibility from any part of the room. It is entirely glare-free and reduces eyestrain.

Care of the Chalkboard

The value of a chalkboard as a visual aid can be greatly improved by proper care and maintenance. First of all, the board must be properly "broken-in" according to the manufacturer's directions. Usually, this calls for covering the entire surface of the board with a layer of chalk dust, rubbing this chalk dust into the surface with a clean eraser, and removing all the dust possible with a clean, dry cloth. This will leave the board with a whitish cast—just right for use. Never wash a modern chalkboard with water, or apply any form of oil, wax, or cleaner.

Most chalkboards can be easily refinished when years of use have worn them down. Liquid surfacer is available which may be brushed on like paint. It dries quickly.

Conclusion

All but forgotten in the discussion of modern visual aids, even an old-fashioned chalkboard still remains a real giant of visual education. Modernized, it is one of the most powerful tools available to teachers. Its applications are many; its cost, low; its upkeep, almost nil. It requires a minimum of training to use.

It is extremely versatile. Yes, the chalkboard was our first real visual aid, and it is destined to continue to occupy an important place in education. Resourceful teachers are, therefore, learning to apply modern principles of display to their chalkboard presentations.

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The blackboard serves in instruction: for diagrams, sketches, drawings, decorative work; for outlines, summaries and directions; as a substitute for the bulletin board; for group or class work; as a screen for still projection — map outlines, picture and symbol, fade-outs; for visualizing work in practically all subjects.

The Blackboard as a Visual Aid

By C. F. HOBAN
Educational Screen, Vol. 8,
No. 6. June, 1929. P. 179.

The following are important factors in the effective use of the blackboard as an instructional instrument:

A. *Quality and Color.* It should be free from defects and with a surface that takes crayon well; it should be securely mounted and supplied with a sanitary chalk rail. Outlined maps, music staff, cross section or graph lines have their place.

B. *Dimensions and Location.* It should be 42" wide. At the front of classroom, the bottom line of the blackboard should be 36" above the floor; at the side and rear, 26" above the floor for grades one to six, and 30" above the floor for grades seven to twelve.

C. *Care.* Keep boards clean and in good condition. At the end of each day, rub boards down with soft, dry cloth, and remove all dust from crayon trays. Clean erasers daily. Each week-end a black-board kit should be used to remove all loose dust and surface grime.

D. *Crayon.* For regular work, dustless; for special purposes, colored.

E. *Relationship to Bulletin Board.* Since blackboard and bulletin board are correlated, a strip of cork or similar material, about 12" in width, should be placed above the blackboard for attaching displays.

F. *Underlying Principles*:
1. All blackboard work should be—
    a. Related to information or instruction.
    b. Definite, accurate, purposeful, and positive.
    c. Clearly visible to students.
    d. An expression of teacher's and pupils' best. Rapid sketch work should be accurate.
2. Time can be saved and distractions avoided by placing material to be used by class, on the board in advance. During the development of an idea, illustration, accentuation or emphasis should be used at the moment it clarifies the mental picture. ○ ○ ○

C. BULLETIN BOARDS

Reading a bulletinboard, like participating in recreational activities, is something you don't have to do. So boards must have reader appeal.

INVITATION TO READING

Some elements that help bulletinboards attract and hold readers' attention are: (1) unity, (2) proper margins, (3) simplicity and clearness, and (4) good use of color.

Better Bulletin Boards

By MARY BUICE
NEA Journal, Vol. 38, No. 8, Nov., 1949. P. 603.

Unity—To stress a single idea, material must be carefully organized. Captions and titles must do more than identify, they must indicate the organization. An over-all title is the usual device for giving a display unity.

Margins—The space at the bottom of boards should be slightly wider than that on the sides and top. If items of the same size are exhibited, place them so the space between them is less than the outer edges.

If the items are of varying size, place the corner exhibits first to make a border. Then mount additional items within the framework established by the corners. Above all, have every item within the bounds of the boards.

Simplicity and clearness—In most cases, some script is needed with pictures. It should be brief and to the point and printed large enough to be easily read. Arrows and directional lines help achieve clearness.

Color—It must be used carefully because of its great psychological effect. Certain colors have a greater visibility.

The color of the bulletinboards themselves is significant. Generally, they should fade into the background, giving sharpness to items displayed.

Paint the frames a lighter color tone than the boards themselves. This makes the boards seem larger.

ACCORDING TO PLAN

A student-faculty committee may well be responsible for the over-all planning of the program of exhibits for the year. It should delegate the responsibility for actually preparing the boards to clubs or classes.

The following topics are presented to stimulate your thinking along the lines of a program for a year or semester: hello week, our clubs, budget your time, good grooming, American Education Week and other special weeks, UNESCO, holidays and special events, great Americans, great educators, health, safety, first aid, recreation, proverb week, getting a job, professional ethics, vocations.

Facilities for carrying out the plans of the committee should be set up. A production room should contain working space for faculty and students and art and office supplies.

CONSTRUCTION AND PLACEMENT

The most costly type of board is made of cork and covered with glass so that it may be locked. Some have fluorescent bars enclosed around them to insure good lighting. Administrative offices should have this type.

A very satisfactory material for making a low-cost board is celotex or any of the wood-fiber types of material. Celotex is preferable to beaverboard; it is softer and takes pins more easily. Buy it in buff shades or tint it.

Burlap and monk's cloth are fabrics suitable for bulletinboards. They may be rolled up when not in use. Inexpensive boards for classroom use can also be made of cardboard or flannel mounted on cardboard. Material to which flannel has been pasted will stick to the flannel board briefly.

Boards should be designated for clubs, departments, special announcements, administrative bulletins, and general announcements. Of course, the placing of boards depends on the purpose they are to serve. Generally, boards should be located where traffic is heaviest but not congested and where there is good light.

The "read-and-run" type of board may be placed at the stair-landing. Boards of this type should carry bulletins of general interest to all.

Another strategic place is near the elevator. This is the "read-while-you-wait" type of board. It can carry more detailed exhibits and can do more than arouse or motivate; it can teach. Brief announcements may be placed on boards in elevators. Teaching boards may be located in the corridors adjacent to the classroom, in the classroom, in the library, and in the laboratory.

Boards should be hung at eye level. Wires, hooks, bolts, or other supports should be hidden from view.

HINTS ON DISPLAYING MATERIAL

After the job of planning the program and procuring and placing the boards is completed, comes the task of actually mounting the material on the boards. Here are some tips:

(1) Mount printed matter on colored paper; underscore main points.

(2) Use three-dimensional objects for emphasis.

(3) Choose two or three colors of pleasing combination for the display.

(4) Use ordinary pins instead of thumb tacks. Pins are less obtrusive.

(5) A stapler with a release which permits the base to swing out of normal position can be used to attach materials to the board.

(6) For novelty, use pins with colored heads to anchor materials.

(7) Organize a large bulletinboard into sections, such as: today, this week, this month; or general announcements, special events, departmental news, clubs, and organizations.

(8) Get student opinion concerning a controversial issue by hanging a pencil and pad of note paper on a bulletinboard.

(9) Leave the bulletinboard blank for a few days before a new display.

(10) Use boards in the classrooms for displaying the picture of the week, best poem, or other creative work.

(11) Keep the materials up-to-date. Never leave them up in the same place for more than a week.

(12) To avoid puncturing an item, put paper clips on the top corners, and put pins in the loops of the clips.

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The bulletin board[1] is an important channel for focusing attention. It can be used (1) to disseminate information, (2) to motivate, (3) to change attitudes, (4) to refresh memory, and (5) to verify or clarify ideas.

If the board is used to give information, the items

Let's Improve Our Bulletin Board

By HELEN MOORE
The Nation's Schools, Vol. 45, No. 2, Feb., 1950. Pp. 74-76.

being displayed should be accompanied by thought provoking captions that come within the class's speaking vocabulary. Select pictures that give a true impression and that will not lead to wrong inferences. Bizarre and highly imaginative illustrations are not suitable.

To motivate children, captions should be stimulating, and the pictures need to pique the imagination. One must not be able to view them apathetically.

The bulletin board that is being used to change attitudes may carry its message boldly, using humor, cartoons or posters. It may change attitudes by giving an accurate picture. A false impression concerning the indolent habits of a group of people may be corrected by a display of photographs showing those people gainfully occupied.

If the bulletin board is used to refresh memory, it needs to be especially challenging. One technic is to use "twin" bulletin boards with related ideas. On one bulletin board might be the pictures of inventors about whom a class had studied. On the other board would be pictures of the inventions of these men. Children would be motivated to match the ideas on the two boards.

Another good method is to post questions on the bulletin board, the answers to which are found in various centers of interest in the room—the science table, the library corner, the construction center.

One teacher recently had a bulletin board display of tide pool life in which she had included questions regarding the minute design on various shells. In another part of the room she had a collection of these shells and a magnifying glass.

When the bulletin board is used to verify or to clarify ideas, the pictures should be selected for the accurate concept they can convey to the observer. In every picture of an unfamiliar object there should be a known object, so the child can make comparisons. If a child never has seen a giant redwood, a picture of one will not give him a real idea of its size unless the picture contains a representation of a man, a house or something else with which the child is familiar. If an attempt is being made to clarify a concept, attention must be given to the amount of detail in the picture. It should not be too detailed, yet all the essentials must be there.

One thinks in terms of a single major idea or theme for each bulletin board. It is an "illustrated paragraph"; too many ideas destroy its effectiveness. In planning the display arrangement one can borrow many ideas from commercial advertisers—wise use of color; short, simple labels; uniform, legible printing; good spacing and balance. A title or "slogan" attracts attention to the major theme and serves to give the board continuity.

The work of planning and maintaining a bulletin board cannot be carried out haphazardly. Nothing kills interest as quickly as neglect or untidiness.

A fairly large board fosters good spacing and neatness. Think of store window displays. Which ones are pleasing and really effective; those that have a few items well displayed or those that have many miscellaneous items? If there is only one large bulletin board in a classroom, the teacher could divide it into sections and allot each section to a single topic. It is wise to use pictures that pertain to areas in which the children have had some experience and background knowledge. These can be accompanied by

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1. "Display board" probably more accurately describes its classroom uses.

thought provoking suggestions, questions or short statements directing attention to specific aspects of the pictures.

A partial list of items appropriate for display includes: charts showing progress, examples of fine work, the responsibilities of class members, suggested stories to read, pictures accompanied by simple reading matter, clippings from children's magazines relative to a familiar topic, news items, appropriate cartoons or bits of humor, charts and graphs, and various announcements.

A well organized, functional display of materials, correctly used, will result in a better grasp of subject matter, more interest in a given area, a breadth of understanding, the habit of careful observation, and practical application of several tools of research.

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Do your bulletin boards attract and hold attention, or do the children pass them without a glance? Do your bulletin boards contribute to the efficiency of the learning process or are they just "holders" for decorations? These are questions we can well ask ourselves about a medium which has been close at hand for years but often not

Bulletin Boards in Three Dimensions

By ROBERT H. SHREVE
See and Hear, Vol. 4, No. 7, Mar., 1949. P. 27.

used most effectively in developing the experiential background of our children.

Bulletin boards have been standard equipment in classrooms for years. 'Tis true we have not always had as much space as we would like. Too often our kindergartens have no bulletin board, or it is so high the four and five-year-olds cannot see it without getting a stiff neck, or going out to the middle of the room.

There are two principal reasons why our bulletin boards are not as effective teaching media as they might be—infrequent changing and cluttered appearance. A bulletin board may be a highly valuable teaching device for a week or ten days, but after that it may be doubtful if children will or should pay much attention to it.

Instead of seeing how many pictures we can get on our bulletin board space, for a change let's see how few we can get. Art teachers and display experts tell us that if our vacant space is equal to the total area of our pictures we may hit a balance of interest not attainable through the traditional "clutter" technique.

If our bulletin boards are going to attract and hold the children's interest, simple titles are a must. Cut block letters out of plywood. Encourage students to help add interest to the bulletin board by painting letters. Children may assist by cutting let-

ters out of cardboard for the bulletin board. Why not make a committee of children responsible for the filing of these letters each time you change the board? This might well be the same committee responsible for the room's picture file.

What can be done in the room poorly equipped with bulletin boards? To make up for the lack of bulletin board space, use the blackboard or walls. Our teachers have just started to experiment with wax.

A small amount of wax placed on the back of your picture, and it will cling to the wall, blackboard or bulletin board as long or longer than the picture will be of value as a teaching material. The wax can be removed from the mounting surfaces, picture or object with the thumb nail. Any small amount of wax remaining can be removed with carbon tetrachloride or any organic base spot remover. The greatest value of the wax mounting material is in making boards three dimensional. The third dimension attracts attention—the third dimension adds reality and thus adds value to the bulletin board as a teaching aid. I have yet to find a material that cannot be mounted with wax. We have successfully mounted wood, glass, metal, paper, plastic and even balloons to cork or fiber bulletin boards, blackboards, painted walls and windows.

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D. DIORAMAS

The writer recently had occasion to use the diorama as a teaching aid in her social studies work. This comparatively new medium is still unknown to a great number of school people. But her students were so interested in it that the writer was prompted to delve further into the history, values, and applications of the diorama for classroom purposes. The results of this preliminary investigation are presented below.

The Diorama Comes to the Classroom

By JULIA VAN FLEET
Educational Screen, Vol. 22, No. 6, June, 1943. Pp. 204-205.

The diorama may also be called the miniature habitat group. It may be defined as a graphic reconstruction of a scene, in three dimensions. That is, it has depth, as well as width and height. In its most highly developed form, it is a sort of stage enclosed in a box. The word "Diorama" is derived from the Greek— "dia" meaning "through" and "horan" meaning "to see," and means literally "to see through."

ORIGIN IN MUSEUMS

Originally used as an exhibit in museums, it was evolved partly from the universal method of installing information, on shelves, or in cases, all subjects relating to the same thing. Subjects pertaining to

science, history and ethnology were commonly presented in this way. The great cost and difficulty of constructing large groups of scenes and the desire to show whole villages, ceremonies and events containing a great number of figures led to the development of miniature scenes. The further method of placing these scenes against background logically led to the use of the curved background.

Size Varies

Dioramas vary greatly in size and construction. Some are very small, perhaps with an 8x10 inch front and a depth of 4 inches, in which cardboard cutouts are placed to depict a scene. On the other hand, the diorama called "The City of Light," which was shown at the New York World's Fair, was of enormous size, measuring a full city block in length.

In the majority of dioramas, the figures are stationary and fixed. In a few, we find removable figures, i.e., those which can be inserted in their proper place in the scene. These can be easily constructed by students of all ages. They are especially desirable for the lower elementary grades, where students are particularly anxious to partake in or carry on activities. Occasionally we find a diorama with moving parts, such as those exhibited in store windows or other large commercial exhibits.

Perhaps the most important factor of the diorama that conveys the third dimensional aspect is the figures. These may consist of any of the following three forms—the flat cardboard figure, the half-round figure and the three-dimensional figure. In a true diorama, the latter is desired, as it brings home most vividly the third dimension, which is essential for a realistic reconstruction of the scene.

Use in Education

This aid to learning is at present in its infancy, insofar as educators have been ready to accept it in their teaching program. The literature on the subject is extremely meager, with only one research study having been reported to date. This is the study by Dr. Irene F. Cypher.[1] A good deal of work in connection with the construction and school use of this device has been performed by museums and WPA visual aid extension projects. Since the diorama is, in essence, an adaptation and miniature representation of the museum habitat group, museum workers have gone one step further and have brought this type of visual representation into the classroom by designing the diorama as a portable aid. Thus the diorama has been serving the same specific and unique purpose in the classroom that has been achieved by a habitat group in the museum, namely, the reconstruction and representation of a scene in third-dimension.

Two inherent characteristics of the diorama makes it especially valuable in arousing and holding student interest. First, it provides a setting in its natural environment. It has greater interest than a flat picture. Secondly, through faithful reproduction, it presents details of objects, people, and of the environment to such a degree that the spectator is challenged to stop and make careful observations. The diorama has been found to be particularly appropriate for use in the teaching of history, geography and nature study, where the introduction of accurate reconstructions of historical scenes and environmental conditions were instrumental in vitalizing and awakening a new interest in these subjects. However, it should be remembered that the diorama is designed essentially to represent a scene in third-dimension and should be used particularly when that factor is essential to the learning process.

Criteria

The selection of dioramas as a tool of instruction must receive considerable attention by educators, in order to insure the correct use of an aid which will be of material help in the educative process. Unfortunately, there is a paucity of research data on dioramas. Few criteria for their selection and use have been developed. Specific questions which should receive consideration are:

1. Is the subject or theme of the diorama of sufficient teaching merit to warrant a detailed study of the scene?

2. Is the scene selected one which is particularly adapted to three-dimensional visualization? Would a two-dimensional presentation be equally effective?

3. Is the factual content of the scene accurate and authentic in detail? Have the proper colors been used? Are the objects in the round or in the flat? Has this factor any bearing on the appeal and instructional value of the diorama?

4. Are the scene and its details sufficiently large for students to be able to see them clearly?

5. Is the diorama light enough in weight to be portable?

6. Is the diorama simple in construction, thus encouraging student construction of dioramas of their own?

7. Is the cost of materials low enough to warrant student production?

8. If there are moving parts are they easily manipulated? ✪ ✪ ✪

1. Cypher, Irene Fletcher, *The Development of the Diorama in the Museums of the United States.* Ph.D. thesis, New York University, 1942.

The diorama is a miniature, three-dimensional group consisting of small modeled and colored figures and specimens, with accessories, in an appropriate setting, and in most instances, artificially lighted.

Dioramas for Secondary Schools

By RALPH KOLSTAD
Audio-Visual Guide, Vol. 15, No. 5, Jan., 1949. P. 20.

The scale and size of the group is variable; there is no standard shape; there is no limitation as to subject matter, which may be realistic or imaginative according to what the creator of the group wishes to portray.

PURPOSE

The diorama should be based on the curriculum. It must make a specific contribution to the unit of work being studied. Certain understandings should be gained through the use of the diorama.

GRADE LEVEL

It should be easily understood.

AUTHENTICITY

The figures and details should be accurate. The diorama is designed to present an illusion of reality, and as such, is dependent upon accuracy of detail to achieve this purpose. Consideration must be given to the artistic work involved, with accuracy of color and scale, as well as correctness of detail. Tied in with this, and with the social implications, it should be constructive and true rather than destructive and distorted.

ADVERTISING

There should not be any advertising present, but if it is unavoidable it *should not be objectionable.*

INTEREST AND INSPIRATIONAL APPEAL

The value of the diorama as a teaching tool is multiplied greatly if it captures the students' interest and is thought-provoking.

USE OF MOTION

The use of motion, unless it is necessary for the understandings to be gained, may prove a needless addition.

COST

Cost is directly related to accuracy and authenticity. It must be weighed against the value of the diorama as a teaching tool. The results achieved through its use will be in exact proportion to the wisdom and care with which the particular diorama has been made, selected, and used.

PORTABILITY

If the diorama is to be brought into the classroom and later returned to a central library for further circulation, its size and weight are important. It should be transportable.

DURABILITY

The diorama should be enclosed in glass to protect it from handling or damage. If there is danger of injuring delicate details, its life will be shortened. A cover or case should be provided to protect the glass panels while the diorama is being transported.

STORAGE

Storage facilities must be provided that will protect the diorama from dampness and damage.

Note: The relative weight to be given each of these criteria must necessarily be dictated by local conditions. Some of these points may be entirely eliminated from consideration in some localities. Elsewhere these considerations may be prohibitive or limiting factors in the use of dioramas.

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E. DRAMATIZATIONS AND PUPPETS

Puppetry is a natural educational experience. Although it cannot be maintained that puppetry is a "must" in the curriculum, it does offer a vital technic for building a program that can bring more than mere fun into the classroom. While bringing joy to childhood should commend itself as a wholesome influence, nevertheless, puppetry in the schoolroom has implications beyond pure entertainment.

In New York City Schools Puppetry is Proving to be a Dynamic Teaching Technic

By TRUDA T. WEIL
The Nation's Schools, Vol. 43, No. 1, Jan., 1949. Pp. 52-54.

Puppetry, particularly in the lower grades, is a confessional, although the child is not aware of it, and gives the classroom teacher the key to the closed doors of the child mind. Even at junior high school age, pupils still delight in projecting themselves into imaginative, dramatic personalities. They feel themselves to be makers of destiny as they pull the strings or manipulate puppet and shadow figures. They acquire a sense of personal power and so are helped into growth and maturity.

Puppetry also offers the wise teacher a natural setting for purposeful living together, the development of social understanding and habits of cooperation, the enrichment of perception, and the enlargement of the power of self-expression.

The teacher should acquaint herself with the story of the evolution of puppetry. It is a story of folkways and folklore. In the eighteenth century, Punch and Judy cavorted for the common folk in England. Hanswurst entertained in Germany, and Karaquez in Turkey. But hundreds of years before that their ancestors had found their way into churches, royal

tombs, catacombs, public market places, and finally the theater.

These forebears were the idols whose moving eyes and arms made deep impressions upon those who watched Egypt's religious processions. They appeared in churches as reverent troopers in Rome's mystery, miracle and passion plays.

The art also can be traced to India, Persia and Thibet. Columbus found some of the puppet clan aiding the American Indian medicine man in the performance of colorful religious rites. Some of Britain's older marionettes were befriended by William Shakespeare and had the distinction of being mentioned in "Hamlet" and "Two Gentlemen of Verona." Cousins of Punch and Judy appeared in Long's Tap Room in eighteenth century New York City to entertain the gentlemen with such choice bits as "Dick Whittington and His Cat."

A few very ancient ancestors, several time removed, are said to have been born before the birth of Christ, and to have appeared as shadows moving behind a brilliantly lighted screen. It is certain that by early medieval times, two-dimensional shadow figures, both translucent and opaque, moved with classic dignity through the daily life of far-off Cathay and Java.

The marionette's intricate family tree today includes many famous descendants, such as the renowned Pinocchio, the popular Charlie McCarthy, and Mortimer Snerd. The entire family can rightfully boast of close association with great musicians, such as Haydn and Gounod, who wrote special compositions in its honor, as well as with great authors of all times and climes, including Denmark's Hans Christian Andersen and France's George Sand.

Small wonder then that today's educator does not hesitate, if the need or the occasion arises, to give this blue-blooded family an honored place in the school curriculum. Whether the family sends its ambassador to the school door in the shape of a Burattini (a mitten or hand puppet), a Marionette (a string puppet, literally, "Little Marie," in honor of the Virgin Mary), or one of the Ombres-Chinoises (two-dimensional Chinese shadow figures) is of small consequence.

Any of these representatives of the puppetry world will help the teacher in the integration of valuable curriculum experience and the selection of meaningful activities for children.

During the school year 1946-1947 ten New York schools undertook a series of laboratory experiments in puppetry. These laboratories covered all grades from kindergarten through ninth grade. The findings are incorporated in a curriculum bulletin entitled "Puppetry in the Curriculum."[1] New York City found that puppetry does help the pupil to:

1. Discover and develop his special aptitudes and talents.

2. Express himself creatively and imaginatively.

3. Develop and use an effective vocabulary and recognize the need for learning and practicing improved speech patterns and for speaking with poise.

4. Extend manipulative skills.

5. Gain improved knowledge of manual, industrial and fine arts.

6. Gain increased skill in work-study technics.

7. Experience the feeling of satisfaction and success that accompanies achievement.

8. Develop individual security by releasing inner tensions through dramatization of experiences related to personal, family or school problems.

9. Share worth-while information and special skills.

10. Develop self-control and consideration for others in the pursuit of a common purpose.

11. Participate in vitalized experiences in the various major curriculum areas.

12. Understand and practice meaningful and orderly audience listening and participation.

At a recent informal conference of teachers of the language arts in New York City, it was reported that puppetry in the fifth grade classroom of one of the participants had created: (1) a taste for better language; (2) a more effective vocabulary; (3) a real love of poetry, poetic prose, and rhythmic speech; (4) a greater desire for reading; (5) a vital interest in playwriting and dramatic interpretation; (6) a more enthusiastic practice of research skills; (7) a will to compose on a high level; (8) an appreciation of, and the practice of, better speech patterns; (9) the natural use of related words in spelling; (10) a welcome use of penmanship for putting down the script.

A third grade class of Staten Island produced an opaque shadow figure play entitled "Transportation in New York Harbor." The report was that social studies were developed to a degree satisfying even to a perfectionist teacher. At the same time, a natural but an unconscious desire for the use of more beautiful language brought forth this extemporaneous sentence from one of the little manipulators:

"The harbor sings to me when I am in bed at night."

In the field of social studies, these children showed a keen response to all new materials on all types of boats, from ferries to ocean liners, from freighters to aircraft carriers, from fire fighters to

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1. Puppetry in the Curriculum Bulletin No. 1, 1947-1948 Series, New York City Board of Education, p. xi.

battleships. They manifested a live interest in the history of boats, from dugouts and canoes to the present. They became aware of how produce is carried to and from the harbor and how food, clothing and other materials help people throughout the world to live and work. They improved their self-expression and use of language through talks about excursions with parents to the harbor. They drew simple maps of the harbor after seeing it from the top of the Statue of Liberty, to which the class had undertaken an excursion, and they made airplane views of the harbor in clay and other materials.

The teacher of a fourth grade class, producing a simple play with crude, all-cloth, five-string marionettes, found that the class offering on Switzerland had brought to her pupils more nearly accurate knowledge about water power because they experimented with simple water wheels. They developed better concepts of avalanches, glaciers, mountains, mountain flowers and wild life because they had to search for this information to incorporate in their play. Even arithmetic was made vital for them through the necessity to understand and use number relationships, measurement, spatial relationships, and estimates of costs.

It is imperative that teachers understand the proper placement of the various types of puppet figures according to the maturation levels of children participating. Enriched experience can result only from the all-round development of children in consonance with their own capabilities.

Teachers need not be artists in order to make these figures. Valuable library texts can be found that give simple instructions on the mechanics of construction. Foremost among such texts are books by E. F. Ackley, Marjorie Batchelder, Pauline Benton (shadow figures), Remo Bufano, B. Ficklen, Sue Hastings, A. M. Hoben, H. H. Joseph, F. J. McIsaac, Mills and Dunn, and F. S. Warner.

The New York City handbook "Puppetry in the Curriculum" gives 36 of its 169 pages to specific and simple instructions on how to make these figures. These instructions were easily followed by classroom teachers.

Like all methodology, the effectiveness of puppetry as a curriculum aid rests on the skill and ability of the teacher. It is the teacher who should have objectives clearly in mind so that the major outcomes are derived at deliberately.

The advantage of puppetry is the extraordinary amount of child cooperation and interest which this technic evokes. As a result, many incidental learnings are made possible for the child, and much information is acquired by the teacher about the child's

personality and capability which otherwise she might never have known. All in all, the imaginative teacher who is a creative classroom influence will find in puppetry a highly desirable medium for synthesizing and integrating work in all the curriculum areas.

TYPES OF PUPPETS RECOMMENDED FOR VARIOUS GRADE LEVELS
KINDERGARTEN TO SECOND GRADE[2]
Fist and finger shadows on wall
Stick figures (can also be used as "still" shadow figures behind lighted screen)
Jack-in-the-boxes
Apple, carrot, potato and yam puppets
Cork, rubber ball, and sock puppets
Single and double paper bag puppets
Accordion fold marionettes
Cardboard or paper one-string marionettes
THIRD AND FOURTH GRADES[3]
Fist puppets of mitten type
Balloon puppets
All-cloth, string marionettes (3 to 5 strings)
Opaque shadow figures (either still or movable)
FIFTH AND SIXTH GRADES
Fist puppets with papier-mache heads
Cotton marionettes with cotton heads (5 to 7 strings)
Translucent shadows made of acetate transparencies with simple movable parts
SEVENTH, EIGHTH AND NINTH GRADES
Cotton or cotton and wood marionettes with papier-mache heads (7 strings)
Cotton or cotton and wood marionettes with cast heads (7 strings)
Translucent shadows made of acetate transparencies with number of movable parts.

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Dramatics are the natural expression avenue of activity on the part of pupils. Humanized education through dramatization seeks to build the child's instincts, impulses, and interests, and enrich his experiences through interpretation of emotions.

Humanizing Education Through Dramatization
By GEORGE W. and NAOMI D. WRIGHT
Educational Screen, Vol. 13, No. 4, April, 1934. Pp. 95-96.

All children play. This is natural and necessary. The games of childhood are original dramatics. Each game is organized activity, spontaneous and stimulating. Each child is an actor. He loses himself in play production. As he grows his play becomes dramatic play, creative and constructive, reaching a higher plane than mere play. Searching for facts and materials which lie about

2. It has been found by actual experimentation that peanut and button puppets are too small to have educational value.

3. Electric light bulbs are not desirable for puppet heads because of danger from broken glass.

him to enrich his play unconsciously forms wholesome habits of resourcefulness which are conducive to creative expression.

The aims and objectives of dramatization are divided into two classifications, information and entertainment. Each has its contribution to make to the curricular and extra-curricular activities of the school.

VARIETIES OF DRAMATIC FORM

A swift survey of the published productions on the market reveals numerous types of plays, pageants and puppet shows. While these are elaborate in design and colorful in conduct, they definitely lack the creative contribution of an original performance by the pupils.

There is a kind of dramatic form for every need of expression and occasion. The pantomime, wherein individuals or groups act but do not speak, adapts itself to the spontaneous activity of the classroom. It requires little preparation for production. It serves to portray interesting incidents and episodes which may be a part of any lesson. It stimulates further dramatization of a higher order. Simplicity is the keynote of the successful pantomime.

The character sketch is an outgrowth of the pantomime. Here the child must study the definite characteristics which he wishes to portray. Through gesture, facial expression, and original language he may quickly indicate his interpretation. Opportunities for character sketches are wide and varied. Here characters from all fields of knowledge become a part of the child's enriched experience.

Another outgrowth of the pantomime is the portrayal of moods. Through gestures, emotional quality and tone of voice, and facial expression, the child gains a deeper understanding, through participation, of the various human moods and feelings. Moods are easily and readily portrayed. They are the stepping stones for further dramatic interpretation.

TABLEAUS

A pertinent phase of group expression is the tableau. By fixed positions, facial expressions, costuming and scenery a phase of life is represented. Tableau representations lend themselves to unlimited fields. They are valuable as a part of the curricular and extra-curricular program. The tableau may be simple or elaborate depending upon its aims and objectives. It affords an excellent avenue for originality on the part of pupils.

Somewhat similar to the tableau are shadow pictures. Behind a curtain or screen a scene is set. A light in the background produces shadows in silhouette of the figures in the set scene. While this type

of dramatization requires more preparation on the part of pupils their interest and enthusiasm are generally greater.

The informal play given spontaneously makes a valuable contribution in vitalizing and humanizing the curricula. Here the teacher acts as a guide, encouraging and assisting. The responsibility and initiative rests with the group. The children select scenes, choose characters, and arrange equipment. The characters converse impromptu and gesture and move impulsively. The success of this type of dramatic activity will somewhat depend upon the child's experience and background in the pantomime, portrayal of moods, character sketch, and the tableau. An informal play affords excellent opportunity for cooperative group work. It stimulates interest in writing original plays.

CREATIVE EXPRESSION

The pupil-planned play involves careful preparation on both the part of the pupils and teacher. Pupils assume greater initiative and responsibility in the planning and rehearsing. The teacher's role is that of counselor and organizer. Her knowledge and technique of play production are assets. Although the pupil-planned play usually consumes more time than any of the forms yet mentioned, the greater educational growth on the part of the pupil justifies it. Creative expression takes form in writing the play, acting the play, planning properties, designing and making scenery and costumes, and in stage management.

Formal plays written for children have a place in the educational program. Their reproduction affects a form of study which may be correlated effectively with the subject matter studied. Such selected plays should be carefully considered in light of the richness of content and opportunities for forming correct concepts. Written plays teach fellowship as well as leadership, developing dramatic appreciation and understanding.

PAGEANTS

Pageant productions are coming into prominence in the progressive educational program. Considering all forms of dramatization the pageant results in a striking and spectacular production. Its use is varied. The pageant is best adapted to large group activity, in the portrayal of events embracing long eras of time. A pupil-planned pageant offers a challenge to the best in creative activity and expression.

One of the most significant movements in the educational process of today is the growing use of the operetta or musical play. The appeal of speech, action, costumes, and scenery, is intensified by ap-

propriate music. Music in the operetta further portrays and expresses human moods. The effective utilization of the musical play and operetta in school is awakening youth to the humanizing arts of life. The opportunities for creative expression and skills are many. The musical play or operetta is drama in one of its most beautiful forms.

An elementary form of dramatic action is offered by the puppet or marionette theater. The production may be elaborate or crude depending upon the ability of the pupils. Making the theater, scenery, stage properties, and puppets, employs the use of arts and crafts. Planning the play, and the dramatic interpretation by the characters, employ all the skills of dramatization. Skillfully produced the puppet show appears realistic. This type of dramatic activity fosters social responsibility, interest, enthusiasm, and enjoyment.

SAFEGUARDS NEEDED

Despite the attractive advantages of dramatization, there are definite dangers and limitations to be carefully considered if one is to secure the most successful results. The teacher should guard against over stimulation and too much dramatization. Care must be exercised to provide ample work experience for all pupils. Since the degree of dramatic ability will vary within any group, pupils of special talent should not be allowed to monopolize the activity. Dramatization involves imagination. Imagination clouds realities. The wise teacher recognizing this, helps the pupil create a sound sense of values. All dramatization must be evaluated. Does it accomplish its aims and objectives? Is it educationally worthwhile?

Outweighing dangers and limitations are the vital values and attractive advantages. Mention has been made of the instinctive impulses on the part of the pupil to actively engage in that natural avenue of expression, dramatization. His school life experience abounds in incentives for initiative along dramatic lines. In making a dramatic correlation the child organizes his thinking, grows emotionally, learns readily and rapidly through enriched experiences. Self-consciousness is forgotten and he becomes an important member of a social group. He welcomes responsibility and assumes his tasks with zest and enthusiasm. He is aware of the possibilities for beauty and truth. He becomes an active agency rather than a passive recipient in the social order of life. He learns to spend his leisure time in a pleasant and profitable way. He becomes a contributing citizen. Dramatic activities have become a part of the program in all progressive schools, and are recognized as humanizing forces in education.   ❂ ❂ ❂

F. EXCURSIONS AND FIELD TRIPS

The primary object of this discussion is to give to parents and teachers some direction and control over the experiences of boys and girls as they go through our educational system.

The idea to be presented here is based largely upon the plan used by Benjamin Franklin's father in guiding his son to a knowledge of various occupations. On many occasions Benjamin Franklin was taken by his father to see the making of a newspaper, the building of a house, the activities of the wharves and shipbuilding so that the boy would have some first-hand knowledge of those activities before he reached the age when he must decide the occupation for the rest of his life. The real reason, however, was to thwart the son's desire to go to sea. Consequently, Benjamin Franklin had a knowledge of the general activities of mankind far beyond that held by other boys or young men of his age. It is not necessary for us to prove that Benjamin Franklin became a great statesman because of this interest which the father took in the training of his son, but parents and teachers who did not have such guidance and attention at the hands of their parents or of their teachers know too well the handicap which has come to them through being unaware of the activities of other people. Some people, who go through these experiences accidentally and make these exceptional contacts by chance, profit as thoroughly as if the process had been intentional. On the other hand, an intentional program carried on through a period of years by the parents or by the school will furnish a better general idea of the world's activity than a disinterested accidental contact can possibly produce.

The School Journey

By S. O. ROREM
Educational Screen. Vol. 8, No. 5, May, 1929. P. 132.

Such contacts as are mentioned below can profitably be duplicated by the school (if the parent has already been interested enough to supply them) or they may be duplicated by the parent (if the school has been interested enough in the children of the community to offer a definite program of this kind). This plan arises out of a concern and interest in the progress which boys and girls make during their years of school attendance.

Throughout the entire school course the spoken purpose of education is to put a child quickly in touch with the experiences which he will meet as he goes from the school classrooms. Any educational activity which we can add *outside* the classroom will serve in two particular ways. First, it will keep the child's mind active in thinking about and talking about real experiences which he encounters outside the classroom. Secondly, it will bring to the child's attention

the fact that the work of the classroom and the work of real life actually go hand in hand. Any outline of outside activity or additional contacts which can contribute real activity along with the concentrated information and facts of our classroom textbooks will stimulate greater alertness on the part of the pupil while he is in school. The pupil will happily say, "I saw that"; "I have seen a place like that"; "This book does not tell all the interesting facts about it"; "I have seen these people at work"; "I asked a man why they do it that way"; "My father and mother took me there"; "I have a relative who works in that city"; "We have some postcards and souvenirs which we bought at that place, I'll bring them to school."

Any plan for school excursions or outside contacts of this kind will intentionally cut into the regular number of classroom hours which a teacher spends with pupils in any subject. This time, on the other hand, is always allotted in some proportional amount to various classroom activities and it is *not* unreasonable to assume that any theoretical study which occupies one hundred percent of the investigation time *cannot* be as profitable as an allotment of time in which a proportion is given to the practical application or observation of the situation about which the theory is being learned. For that reason, if ten percent of the school time is spent in out-of-school application and observation of facts which have been studied during ninety percent of the time in school, the result will doubtless be better than one hundred percent of the time spent in classroom repetitions. This means that in a school year of one hundred sixty, one hundred eighty, or two hundred days, sixteen, eighteen, or twenty days could be used for these outside contacts each year without any appreciable loss in the efficiency of the classroom work and with a chance for an appreciable gain in pupils' understanding.

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Excursions are valuable because they help the pupil to come into real contact with his immediate environment and to gain a better understanding of it; they suggest activities which may lead to other experiences; they supply a basis for content material which develops in the classroom; they settle debated points or verify conclusions; and lastly, they give information. Field work not only vitalizes school work and relates it to life outside the classroom but also offers opportunity for good citizenship training. One must keep in mind that a field trip can be a waste of time. Its results may range from good to bad. A field trip should not be a mere picnic nor an opportunity to

Field Trips Develop Community Interest

By L. R. WINCHELL
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get outdoors for a few hours of relaxation. It should be a purposeful activity, preceded by careful planning, and followed by class study.

NEED IS IMPORTANT

Pupils should have reached that stage in the development of a lesson where they feel an urgent need and desire to take a field trip. The teacher should be familiar with the place to be visited, and before starting there should be a discussion of the things to see in order that the class have a definite purpose and plan. During the trip pupils in the upper grades should take field notes in order to develop the habit of recording their impressions neatly, effectively, and pointedly. While on the trip there should be systematic discussion and study in order that definite problems may be solved and correct emphasis placed. After returning to the classroom definite use should be made of all information gained.

I should like to illustrate what has been said by means of a unit of work done by two of our eighth grade geography classes on the industries of our community.

Early in our discussion of local industries the two classes came to the conclusion that the best way to learn about the factories was to see them in operation. The idea was very pleasing to them and they set to work with a will to prepare for these visits.

We prepared a list of all the industries in Vineland and found that they were grouped into the following classes:

A. Clothing factories
B. Glass factories
C. Canning factories
D. Poultry farms
E. Fruit farms
F. Agricultural equipment plant
G. Electric and water power plant

We decided for our purpose it would be enough to visit one of each type. We had no trouble in arranging for our visits with the owners of those plants we wished to see. We found all of them cordial and helpful, and their attitude made an impression upon the children when they found that for the owners our visit meant a loss of money in slowed-up production.

Before making each field trip we discussed the purpose of our visit and prepared an outline for our observations and questions as follows:

I. Reasons for location of Vineland.
   A. Why did you locate in Vineland?
   B. Is the location still suitable?

II. Raw materials.
   A. What kind of raw materials do you use?
   B. Where do they come from?
   C. Are they affected by tariff?

III. Labor.
   A. How many people do you employ?
   B. Are the majority of workers men or women?
   C. Are the workers skilled?
   D. Are there safeguards for workers?
   E. Are there compensation laws?
   F. What is the salary scale?

IV. Method of production.
   A. Is the work specialized? (Describe the steps.)
   B. What types of machinery are used?
   C. Is the work begun and completed on the premises?

V. Transportation.
   A. How is the product sent from Vineland?

During each visit the children answered the questions as well as they could from observation, and then in a group were given an opportunity to ask those questions which they had not been able to answer for themselves. They were very well behaved and business-like and made an excellent impression on those with whom they came in contact.

During the six weeks we were able to visit five plants. The classes were divided into groups, each group taking a phase of community life as follows: Education, religion, recreation, and transportation. Each group carried on individual research. We then prepared a book on Vineland. Besides this, the children had made their individual booklets on the industries and had a large map showing the location of all factories in town.

What were the values derived from these visits?
A. They left permanent vivid impressions.
B. They supplied facts not secured by reading.
C. They gave interest and variety to work.
D. They provided vocational sampling.
E. They gave an opportunity to teach and to use good manners.
F. They gave an opportunity to discover new problems.
G. They gave an opportunity to develop a critical attitude.

I doubt very much whether those children now remember or will remember most of the things they learned that year, but I do know that they will not forget the facts they learned from their excursions to the local factories and farms. I feel certain there is no more stimulating and interesting means of learning than a well-planned field trip. ○ ○ ○

"In our last seminar we cited the contribution which the school excursion may make to building word meanings. Would it not be profitable for us to outline the steps which will guide the teacher in planning and in conducting successful school excursions?" inquired Miss L——, as our group continued its study of visual teaching techniques.

Ideal Conditions for Field Trips

"I agree," said Miss R——. "I recently took part in a field trip which was certainly a waste of time. It seemed to me that the trip was scheduled just to take a trip."

"A successful field trip is the product of careful planning and organization," I said. "Weather conditions, time factors, transportation problems, and numerous details may combine to defeat or accomplish the purpose of the journey. Nothing should be left to chance.

"First, the place to be visited should be selected in terms of the needs and interests of the majority of the class," I continued. "Second, the teacher should make a preliminary survey of the location, and contact the personnel in charge."

"What points should the teacher cover in this preliminary survey?" asked Mr. B——.

"Permission to observe should be obtained, convenient visiting hours should be determined, arrangements for a guide should be made, rest-room facilities should be noted, and items of interest should be recorded," I replied. "With this information in hand, the teacher is then in a position to secure the cooperation of the school authorities, and complete her plans."

"What items should be arranged with the school officials?" asked Miss L——.

"Many schools have administrative forms for teachers to use in making arrangements for a field trip," I answered. "These forms, which have been developed as a result of experience, help the teacher to cover such important details as approval for the trip, the place, the route, the date, time of departure and time of return to school, changes in class schedules, transportation, financing, the consent of parents when necessary, and the notification of other teachers affected."

"What information should be given to the class?" Miss R—— asked.

"The teacher should make sure that members of the group are informed as to suitable clothing for the trip, the place, date, time, food arrangements if necessary, financing if required, note paper or any other

equipment required, standaras for behavior, and safety rules to be observed."

"We have been listing the administrative factors essential in planning a field trip," remarked Mr. G——. "What are the main teaching techniques involved?"

"A field trip is a co-operative enterprise in which the pupils are the active agents and the teacher is the guide," I answered. "The need for making the trip may be developed during class discussion or as a group activity. The purpose of the journey should be clearly established in the minds of the group. The important items to be observed may be listed."

Miss R—— asked, "How may a field trip help in solving problems?"

"If the motive for the trip stems from a particular problem," I replied, "discuss in class how it may furnish data which will help in arriving at a solution. Preliminary training in making accurate observations may be accomplished by studying pictures, slides, or a film related to the topic. On the trip, carefully prepared questions will help direct the attention to significant facts. In this connection, training in recording data may be found to be necessary."

"How may we co-ordinate the interests of the class with the fairly set routine some guides employ?" asked Mr. B——.

"This is one of the many points which prove that the teacher benefits by making a preliminary survey," I answered. "By knowing in advance what to expect and by giving the guide a set of the questions prepared by the pupils, the teacher may win the guide's co-operation. Also the teacher can help the guide by asking on-the-spot key questions which connect the observations to the purpose of the trip."

"When the pupils return to the classroom, what should be the nature of the follow-up?" inquired Miss L——.

"Group discussion, the development of creative projects, and testing are standard procedures," I replied.

"How may a teacher evaluate the total experience?" Miss R—— asked.

"There are many criteria which may be used to appraise the outcome of a school excursion," I replied. "Did the trip serve the purposes intended? Was it worth the time, expense, and effort involved? Were the pupils stimulated to do creative work? Was the information gained worth while? Were the public relations satisfactory? Were wholesome attitudes developed? Did the pupils show growth in the ability to observe, and to reach constructive conclusions?

"The successful field trip offers exceptional opportunities for socializing instruction and blending school activities with community life," I added, as our discussion came to a close. "Through the school excursion, the learner is put in direct touch with things, persons, occupations, and events in the community under a controlled learning situation. There are numerous opportunities for field trips present in every community. The important problem for the teacher and school is to select and organize properly those trips which will contribute most to the learner."

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The motion picture (a vicarious learning situation) and the field trip (a direct learning situation) are each essential to advance children's thinking and to increase their appreciation. This article is limited to a consideration of their use by fifth-year and sixth-year pupils, and their teachers.

Using Motion Pictures with Field Trips

By E. W. CRAWFORD
The Instructor. Vol. 63, No. 5, Jan., 1953. P. 11.

During the planning for such experiences the teacher chooses several films, evaluates each in the light of her objectives, and makes her selection. She may spread their use over several days. She takes the field trip by herself in advance (unless she is already familiar with the ground to be covered). She plans with principal, host, parents, and transportation company; attends to insurance and liability waivers; and helps the children plan their observations and care of specimens, if any.

Motion pictures can motivate field trips. A group of sixth-year boys whose class had studied a film on correct bicycle practices were concerned because some younger bicyclists were not always careful. The class discussed the situation, and studied the film again. They decided to divide into groups and make a morning, noontime, and after-school survey on roads. Committees gained the co-operation of principal, school police officer, and mothers. After this the class thought an assembly program to demonstrate good bicycle habits would be effective. The survey, repeated a week later, revealed a great deal of improvement.

Motion pictures can lead to language arts experiences. A class studied films to help them understand how the life, industries, and products of the Mexican people are largely a result of the geography and climate. With this background, one girl invited the class to her home to enjoy the films her parents had taken in Mexico, examine native articles, and enjoy refreshments on Mexican dishes. The next day she asked the class if it would not be fun to make a sound track for her father's film so they could hear it in the school's magnetic motion-picture projector. Her

father supplied an edited copy of his silent film. The children studied the film, selected music, wrote and practiced the script, then took turns reading parts into the microphone to record it on the sound track while they looked at the film. The class invited the girl's father and mother and the parents of all the children to view the film and listen to the class-produced story.

Motion pictures can lead children into concerns far beyond the original purpose of the study. A teacher was using a film to help rural children understand why certain industries flourished in their state. During the discussion on farming the problem of migrant workers caught the children's attention. For several days they kept asking questions, so the teacher planned a trip to a farm which employed migrant workers, and carefully prepared the class. A group of serious children returned for further study. Enterprises were developed for making and sending gifts to the migrant children. The teacher realized that this trip was of lasting value in human relations, and more important for the children than the study as first planned.

Motion pictures and local field trips can lead to week-end trips. A class was investigating conservation of natural resources. A film on the formation and erosion of soil sent the class on a trip around town. Gradually the teacher developed the idea of taking the class on a week-end trip to a state park to study flowers, wild life, and soil conservation. More films were studied and the necessary plans were made for the trip. One mother offered to take motion pictures if the children would plan the film, and the teacher planned to take miniature slides. A member of the state conservation department greeted the children and the parents at the park. After the pictures were taken, one group edited the film, another wrote the script and recorded it on tape, a third planned a class discussion using the slides, and the fourth group made a diorama showing methods of controlling soil erosion.

Information from motion pictures can be verified or supplemented on field trips. Spring came and with it the school garden, so films on planting and seed germination were studied. The children wanted to see how "a real farmer does it." On the first trip they saw the farmer plant a garden. Later, on a second trip, the class compared their school garden with his. The exchange of string beans and the letters of thanks revealed their joy in this enterprise.

Field trips can be taken to discover and enjoy natural beauties like those seen in films. Nature films explained so much more than the children had discovered alone that they asked their teacher to take them where they could learn to know the birds, butterflies, and flowers.

On field trips children do some things they have observed in motion pictures. The need to read maps led to the study of a map film. This film was responsible for a compass-and-map trip during which the children made observations and drew maps. They returned to study the film again, and to improve their maps.

Films studied in school can lead children to go on field trips of their own. Nature films dealing with birds led some girls to form a club to study birds each Saturday morning in a mountainside park. Later they watched bird migrations in the spring and recorded the information.

Family trips and school motion pictures can lead to field trips. Children who were studying South America had been to the circus with their parents. Their interest in the natural environment of the wild animals suggested a film which in turn resulted in a museum trip to study habitat groups.

School films often interest parents in taking more and longer trips than is possible for school groups. Films which depict historical events; lives of statesmen, writers, artists, and musicians; or films of natural wonders and parks, give children a motive to interest their parents in taking them to such places and to exhibits to make observations.

Motion pictures and field trips give children an understanding of human society. Trips to centers of community service, welfare agencies, local and county courts, state and federal departments, and the United Nations call for the use of films before and afterwards. Observations and restudy of the films result in additional trips.

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G. EXHIBITS AND MUSEUMS — OBJECTS, SPECIMENS AND MODELS

The value of the museum as an institution for the preservation of objects depicting the progress of man and of civilization is a well established fact. For centuries museums have been concerned and associated with the culture of peoples and countries throughout the world. The museum as a vital force in education, however, is of more recent origin.

The Educational Museum

By A. W. REITZ
Educational Screen. Vol. 12, Nos. 1, 2, 3. Jan.-Mar., 1933. Pp. 6-9, 43-44, 73-74, 76.

While all museums have varying degrees of educational value, the true educational museum is rather unique in character. Most museums, at least at their inception, have been formed from collections which have been more or less interestingly displayed for the view of certain select groups, or for the general public. An educational museum on the other hand is a museum laid out solely from the viewpoint of the educational needs of the child and in accordance with

the best educational and psychological practice. An educational museum is set up primarily for the benefit of the children and teachers within a school system, rather than for the general public or for general exhibition purposes.

PURPOSE

The purpose of the museum in education is to present to the child concrete examples of materials and objects with which they would not ordinarily come in contact. Objects which may be included are animals, birds, plants, and minerals, as well as replicas and models of all sorts. The museum is to aid the teacher to present more vividly and more interestingly much of the information included in the various lessons.

An educational museum is often a necessity even in communities which have other museums which may contain very complete and detailed collections. Many times an extensive collection of objects is distracting and confusing to all but the most advanced student of a subject. Such an extensive collection may nullify any interest which may have been aroused in a student before a visit to the museum. On the other hand, a smaller collection, carefully assembled and interestingly arranged according to the best educational practice, may be the means of arousing a genuine desire to know more about the subject. Such aroused interest can then usually be satisfied at a nearby museum which may have a very extensive collection.

For those communities which have no museum an educational museum is a real necessity and such a museum will fill a real need in the school life of the community. Such a museum also offers much to the people of the community. The value of an educational museum in a community is becoming more apparent as the teaching program is becoming more complex and as the need and value of objective material is more fully realized.

The relation of the educational museum to the school should be one of whole-hearted cooperation for the mutual benefit of all concerned. The assistance and material supplied by the museum to the schools, should improve the teaching and at the same time increase the interest of the pupil in the particular museum and in museums in general. In other words, it should make a boy or girl "museum conscious." The museum should not attempt to take the place of the teacher and neither should the schools pass over the responsibility for the actual teaching to the museum. The museum should assume the position that its true purpose is to aid in making all forms of teaching more vivid, interesting, and vital.

The operation of an educational museum by some co-operating agency is also a possibility. The two institutions in a city most likely to consider such a proposal are a library, which is not an integral part of the school system, or an independent museum.

Regardless of the type of organization of an educational museum, be it a separate department of the school system or part of a cooperating agency, there are numerous functions which it can perform for the benefit of the schools.

FUNCTIONS

An important phase of the work of an educational museum is the acquiring and preparation of models and exhibits of many types and forms. There should be set up such exhibits as can not readily be transported to the schools but which can be shown to the best advantage at the center. The educational museum must also collect and make up such models as can be circulated to the schools for the direct use of the pupils. The distribution of such models and exhibition cases can perhaps best be handled by the department of visual aids delivery service, or in the case of a library, by the library delivery service.

The building of models and exhibits requires careful work. Whenever possible, models and exhibits should be built to full scale and carefully executed as to color and form. They should represent as nearly as is possible the actual object or scene after which they are modeled. Through a well executed habitat group, it is possible to study not only the particular animal, but also the section of the country which it inhabits, the form and type of plant and smaller animal life related to the main group, the topography of the country, and many other valuable points. The use of full scale models for this type of work is highly desirable and should be used whenever convenient and economically possible.

When smaller scale models are used, it is usually more important that the general plan of the model is faithfully reproduced than it is to have all of the details included. This is particularly true in the case of models representative of historical or geographical scenes where extreme attention to detail may distract from the observation and understanding of the model as a whole. In all scale models it is extremely important that the scale be clearly indicated and that the person viewing the model fully realizes that the scale is either smaller or larger than the actual object.

In preparing scale models, such as of insects or parts of the body, which may be larger than actual size, care must be exercised that all parts of the model are enlarged proportionally in order that there may be no misinterpretation of the model.

The matter of lighting should be given very careful consideration as it is possible to greatly heighten the effect and to increase the interest and educational value of an exhibit through a skillful use of artificial light. Whenever possible such lights should be of the concealed type. With the proper lighting the illusion of depth, which is often highly important, can be greatly increased and a much more realistic exhibit can be achieved, than if the exhibit depends upon natural light.

On the whole, the criteria for setting up exhibits, particularly large exhibits placed in the educational museum center, should be quality and faithful representation rather than cheapness and quantity production. A few carefully executed models and exhibits are of greater educational value than a large number which do not faithfully represent the subjects. Again, a poorly made model or exhibit may give a child a false impression of a subject. Every model and exhibit which the educational museum places on view should be the best which it is possible for the museum to obtain.

Another phase of the work of an educational museum is the docent or museum instructor. The duties of docents are to conduct lessons at the educational museum through the use of the illustrative material available at the center. Such lessons may take the place of a regular school lesson. Again, there may be lessons on topics of general interest but not necessarily in the course of study. The lessons may be given during regular school hours, which is the usual custom at an educational museum, or they may be given outside of school hours. It is the duty of the museum instructors to cooperate with the individual teachers in arranging lessons which will be most worthwhile to the pupils. A more limited form of docent service is in furnishing guides to conduct classes through the various sections. There is usually a need for both types of service, namely the docent or museum instructor, and the museum guide.

The educational museum should provide for the training of teachers in the effective use of the material available at the center. This may be done through a regular teacher's training course conducted at the educational museum or through teachers meetings conducted at the center. Full opportunity should be given for any individual teacher to obtain such information and assistance as may be needed for the best use of the educational museum's facilities. All teachers should be encouraged to make their needs known to the museum in order that material which is most worth-while can be obtained.

The educational museum should cooperate in establishing friendly relationships between nearby museums and the schools for the mutual benefit of the museum and the schools. In this way the schools may receive the advantages of the museum collections which are probably far more extensive than it is possible or desirable to set up at the schools.

The educational museum can render valuable service after school hours. One of these activities, which is used quite extensively, is the "story hour" at which time a story is related, based on museum objects or exhibits. Museum games in which the children study the exhibits and then answer a series of questions based on them is another device. In both of these activities a reward, such as a picture or booklet bearing on the subject studied, may be given for the successful completion of the answers. Such service has many desirable and valuable features. It is a means of giving information of a worthwhile nature to those who attend the educational museum after school hours and it is also a means of developing a worthy use of leisure time. The educational museum may also become a center for nature study, stamp, photography, geology, or mineralogy clubs. A room at the center may be set aside for the use of such groups as Boy Scouts, Campfire Girls, and similar organizations who are interested in nature study or in related fields. It is also possible for the museum docents to conduct field trips to nearby points of educational value.

The educational museum may arrange for illustrated talks on general scientific subjects, which might be given by members of the school's teaching staff. Illustrated talks can also be given for the benefit of the public, on the activities of the schools. By these means it is possible to establish the museum as a cultural influence for the public at large.

Through contacts with the public it is often possible to receive considerable aid through gifts of collections or of money with which to further the work of the educational museum. The acceptance of all gifts of collections should always be upon a written agreement that the museum shall have full power to use or dispose of any or all parts of such collections, if in the judgment of the museum it is to its advantage to do so. Such disposition may be made through sale, exchange or gift, but in any event any article acquired in its place should be credited to the first donor.

There are certain other functions, such as, the distribution of slides and films which under some types of organization might be part of the educational museum. However, no attempt has been made in this article to include all possible functions of an educational museum or those functions which might better be handled by some other department.

In conclusion, it would seem that an educational museum can best be organized as a major division

of a department of visual aids. It should be under the direct supervision of the director of the department of visual aids, or such a person whom he may designate. Its primary functions should be:

1. To provide objective material for the use of the pupils, both at the museum and at the individual schools.
2. To acquire and make up such models and exhibits as are essential to effectively teach the course of study.
3. To provide for teachers' training in the use of museum material.
4. To provide museum instructors and guides for the effective use of museum material and exhibits.
5. To cooperate with other nearby museums for the use of such material as is not available at the educational museum.
6. To render the best possible service, first to the schools, and second to the community.

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The perfect "visual materials" for teaching are the actual objects themselves, standing or growing in their native environments, but most of these environments are utterly inaccessible to any given school. The most nearly perfect substitutes, then, are the actual objects, gathered into an accessible place, with the native settings reproduced as perfectly as possible by human art. The museum, in other words, is the supreme source of the finest materials for visual teaching. The museum should be, therefore, the most potent force in the visual field, the central citadel of the visual education movement. It is not. Why not?

Museums

By N. L. GREENE

Educational Screen. Vol. 12, No. 9, Nov., 1933. P. 240.

The great museums of America represent a colossal investment, probably greater than that of any other organization or enterprise serving the visual field of education. Within the limited range of their influence, museums render unparalleled service to the educational cause. But these costly treasure-houses are not fulfilling a fraction of their possibilities. Millions of dollars have been spent to give a tiny bit of our population fleeting glimpses of a multitude of things. It is an enormous expenditure for a relatively slight and superficial result.

If this situation were inevitable or necessary, there would be grave reason to doubt the wisdom of such investments to achieve such elementary purposes. But the situation need be only temporary. So far our museums have succeeded in financing the major costs of buildings, collections, organizations, classifications and displays. It remains to accomplish what will justify the whole magnificent achievement,

namely, to carry these values to millions, instead of thousands, of the people that vitally need them.

The museum's opportunity to serve is cruelly limited. It has so much to give, so few to give it to. The museum has immeasurable value for every community in the country, yet it can serve only its own community. And this community must come to the museum. How many come? A large proportion of the local population never come at all. A still larger proportion probably averages less than one visit per year. A mere handful (is it even 1 per cent?) is sufficiently appreciative to come often and stay long, and only these out of the whole community derive anything like the full value the museum was built to give. Hence this palatial home for priceless things drawn from the remotest corners of the world exists to serve one out of a hundred people who chance to live within visiting radius of the spot. For the other 99 out of a hundred in its own territory, and for the tens of thousands of other communities in the land which could benefit equally by its treasures, the great museum stands helpless to serve. "The mountain labored and brought forth a mouse," as Horace put it.

Consider, too, the average "visit to the museum" as made by this fraction of the community. The visitor struggles through the great entrance doors, wanders toward the first row of glass cases he sees, or to the first exhibit that catches his eye. His vision sweeps over numberless objects in case after case, he pauses at points of special interest but soon moves on "or he will never get over it all." He turns right or left into adjacent rooms according to what he glimpses through the doorways, strolls on and on, until the thousands of objects passed have surfeited his gaze and numbed his attention. His eyes then rove over floors, walls, ceilings, and over other stragglers making their "visit" with him, and intermittently over those inexhaustible and now exhausting exhibits. He walks more slowly, more aimlessly, until he finally hits upon some cogent reason why he "cannot stay longer today but will come back again instead." He seldom comes back that year. His visit exemplifies the average use made of a great museum for more-or-less-informational entertainment, not for intelligent acquisition of knowledge offered for the taking. Such a visit is vaguely profitable to the visitor for a certain pleasant mental stimulation, for an occasional fact retained, and also he can say henceforth "O yes, I have seen the museum."

The moments when a museum does some of its finest work are when a class from a neighboring school, accompanied by an expert teacher who has prepared the pupils properly for the experience, is spending a rich hour or two pursuing a specific topic. But here again, unfortunately, only a pitifully small part of

the museum's values can be absorbed. That class can come only at rare intervals. And it is but one of many classes in the school. Every class in the school could be using the wealth from that museum every school-day of the year. But good teachers are few, school routines are crowded, and the average pupil is limited to a glimpse or two per year, or a mere corner or two, of the great treasure-house called "museum."

It is quite general among museum directors, even the greatest, to be deeply impressed with the service they are rendering, and suavely contented with their achievement as it stands. They have no doubts of the dignity and worth of the work they are doing. They should have none. It is a great work. If they would only suspect that it might be ten-fold greater, perhaps a hundredfold! They need only stop thinking of the museum as "the Mountain" and the public as "Mahomet." The first museum to realize "the Mountain" is the public and the museum "Mahomet" will be on the way to the greatest achievement since the visual education movement began. Museums need not continue as mere brief spectacles for thousands. They can be living fountains of learning and inspiration for millions every day of every year.

<p style="text-align:center">✪ ✪ ✪</p>

We were wondering, in the last issue, why museums are content to exercise only an infinitesimal part of their potential influence; why such huge investments should be allowed to realize but a fraction of one percent in value to the public for which they were made, why these stately edifices, with their priceless contents, should be let stand year after year in semi-stagnant isolation, satisfied with the meagre figures from turnstiles as an index of their achievement.

Museums and Photography

By N. L. GREENE

We hasten to admit the fact that not a few museums have long since recognized this danger of sterility and have gone to great effort and expense to avert it. The effort usually takes the form of circulating-unit-cases carrying actual objects in their settings, collections of sample stuffs, sequential arrangements of process-materials, topical groupings of manufactured products, etc. The unit-case is valuable when any one sees it. Its costly weaknesses are getting it built, getting it moved, and getting it seen.

A museum exhibit is worthless except when human eyes are looking at it. The degree of its worth depends upon the minutes or hours it is looked at by those eyes. Now what is the fate of the unit-case in schools? In a pitifully large majority of schools so served the case means little. Where to put it is a problem, customarily solved by placing it in some corridor more or less dark, at a point where it will be least in the way during change of classes. The average pupil's chief concern is not to bump into it in going by. A few look at its contents a moment or two, the day it arrives, and merely dodge it the rest of the two weeks. Occasional schools have a teacher sufficiently alert and conscientious to take her class once to the case for thoughtful viewing and discussion, when those students near enough to see gain real value. A specialist in decimal statistics might determine the coefficient of efficiency of such a case in its round of the schools.

Assuming, however, adequate viewing of the exhibit, consider just what these unit-cases do. They aim to duplicate the object as it stands in the museum for use at a distance. A most worthy aim. Nothing can equal "the object itself" for educational purposes. But the supreme argument for "the object itself" is that it permits the play of all the senses, and "we learn through all our senses, not through any one alone." Quite true! Yet the object, as displayed in the museum or in the unit-case, is carefully and necessarily guarded against the operation of any sense save vision. Inaccessible position, guard rails, or enclosing glass ensure that the public shall not *touch, taste, smell* or *hear*. It can only *see*. Further, it can see from one side only, for the opaque sides and back of cases and cabinets assure this limitation of view. The same exclusive appeal to vision, the same limited viewpoint, spell "picture." If vision is the only sense that can act upon museum objects, why all the costly procedure of transporting objects hither and yon? Why not a perfect *picture* of that object—a picture costing cents instead of dollars for production, duplication, transportation and replacement?

Tradition is an excellent asset, rightly used. It should serve as the one sound standard whereby to test and select the new, not as a formula to embalm and eternalize the old. The museum tradition is venerable and deserves the authority it wields. For twenty odd centuries—from Alexandria to America—there was no chance or reason for the museum to change policy or method. "Gather things, anchor them, and let who will come and see." But from 1833 to 1933, one brief rich century, certain things happened of which the museum world is still too blissfully unappreciative. Photography was born with the daguerreotype, and there followed the transparent negative, the paper print, the stereograph, the lantern slide, film and the motion picture, silent, in color, in sound.

Photography is ready and waiting, with all its forms and subtleties, to end the isolation of museums. The picture, the right kind for the specific ob-

ject, can carry the museum's treasures abroad safely, cheaply, accurately. It can move the mountain to Mahomet, wherever Mahomet may be. A museum now doing sporadic circulation of cumbrous objects can saturate with service its community, its State, and forty-seven other States with the money now used in laboriously building and carting around a few costly unit-cases to local schools.

Once photography has been harnessed for the purpose, museums will be emancipated from present handicaps. They can broadcast all their possessions. But a fraction of their exhibits are adaptable to unit-cases. Most of them are too large, too small, too rare to be risked in transportation. But no group can be too large, no fabric too delicate, no exhibit too costly for pictorial distribution. Difficulties of cost, once prohibitive become meaningless. With modern camera equipment a few cents makes the perfect negative, a few more the print or slide; a few dollars make duplicates by hundreds, and transportation is a matter of penny postage. Result? The original objects stay safely in the museum, but the whole collection can be laid under the eyes of millions, in homes or in schools, to be scanned and studied as long and as often as the spirit or the teacher moves. When museums accept what photography offers them they can take their normal place at the head of the visual education movement.

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We would urge upon museums, great and small, a careful consideration of Oliver Wendell Holmes' great invention, the humble stereograph. The worthy poet-professor builded better than he knew and, unfortunately, better than museums seem to know. The stereograph, in its modern perfection, looks very much like a cure for the museum's greatest weakness, inaccessibility.

The Museum and the Stereograph

By N. L. GREENE
Educational Screen. Vol. 13, No. 2, Feb., 1934. P. 35.

Procedure would be simple and results fast. Initial equipment would consist merely of a stereoscopic camera of highest grade but in the modern small size—amply strong lights, with cable —quarters for developing and printing—and expert operative skill. Then, make perfect negatives of objects and displays, large and small, covering the museum's collections rapidly or slowly, partially or completely, as desired. When backgrounds are present the stereograph will carry every detail. Show case objects can be done individually, against black velvet, perfectly lighted and shadowed, and with the distraction of adjacent objects eliminated. Actual size is readily shown by inclusion in the field of a familiar object whose dimensions are universally

known—a human figure beside a large display (but face away from the camera, for the human face distracts from the inanimate objects offered), a dime beside a tiny object—but never a ruler or scale, for that introduces an interpretative step from the concrete to the abstract. The viewer's mood for the concrete should not be interrupted.

We would guard against the idea that we are suggesting an inferior substitute for a museum exhibit. The stereograph would mean not only increased efficiency of service at decreased cost, it comes perilously close to being better visual material than the exhibit itself in several respects. The pupil with a scope at his school desk, for example, is using the museum's material under perfect conditions; he is in a learning situation, without distraction, intent upon the subject under study, seeing it even more perfectly than his eyes could see it at the museum, with no brass railing to hold him at a distance, no glass case that he must not lean upon, no neighbors to jostle or crowd, no group urge to move on to the "next thing to see." He can think, reflect, gather in every detail in undisturbed absorption, and fit it satisfyingly and accurately into his previous stock of learning.

In the school field alone, how meaningful would the museum become! Instead of an occasional visual consciousness of an exhibit case glimpsed in a dark corridor during change of classes, in addition to a possible semi-annual visit to the museum itself (and the stereographs would provoke more visits), young America could hold daily, in studious comfort, the finest treasures of our splendid museums within a few inches of his eyes, and for his eyes alone.

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As a result of studies made in the Museums of the Peaceful Arts, of New York, and in leading museums of science and industry in Europe, we have made certain deductions as to what constitutes a good educational exhibit. It is premised that the museum is of value both for adult and child education, without the compulsory features found, as a rule, in our educational systems. This requires that museum exhibits should first attract, even entice, the visitor, and second, that the manner in which they are put together should be such as to sustain attention until he obtains a clear picture or understanding that is of educational value.

Visual Education in the Museum of Science and Industry

By F. C. BROWN
Educational Screen. Vol. 7, No. 5, Oct., 1928. Pp. 181-182.

The highest type of exhibit is that which attracts the visitor to want to see it and which impels him to think about it long after he has seen it. If this

thinking culminates in questions, library reading, and a certain amount of activity on the part of the visitor, the exhibit may be called good. In general, an exhibit is attractive when the visitor can operate it himself by pressing a button, turning a crank, pulling a string, or going through various manipulations with his hands, feet, mouth and eyes, and in certain exhibits the visitor may even use his olfactory sense. If the exhibit is not quite clear to the visitor after the reading of a brief label, he may, in many cases, press a button and see, in a motion picture, how an apparatus works. For example, the visitor who has never seen any kind of a lathe work might like to see, in a motion picture before him, how the pole lathe is worked. He can then himself, within a few minutes, carve a piece of wood in the old lathe just as it was done in the seventeenth century. The untrained visitor, in fact, can do this much more easily than is possible on one of our modern lathes.

We have found that an exhibit of second order of merit is one which is operated and explained by a guide. The guide may cram more facts into an allotted time and may make the wheels go around quicker, but there is not the interest or the value that there is in the visitor-operated exhibits. It is somewhat the difference between the lecture method of teaching and well-directed classroom work. The model, enlarged or made smaller, as the case may be, is perhaps next in interest and importance, providing it is not encased in glass, so that the visitor may feel nearer to it. Exhibits that are of a low order include merely aggregations of products, maps, charts, or anything that is encased in glass, dead or not functioning either at the will of the visitor or of the guide.

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While a great deal of material has been published on the educational value of the motion picture and the filmstrip, it is amazing that some of the forerunners in the visual-aids field have been notably missing from current literature in the field. This seems to be true of models, specimens, and objects.

Plastics in the Visual Aids Program

By
HAROLD HAINFELD

Of special value is the use of plastics as an aid in teaching. Transparent plastics enable teachers to show students, for example, complex moving parts of machinery. Biological specimens embedded in a liquid plastic that hardens when heated can be studied without the disagreeable odors of preservatives or the usual disintegration from constant use.

I was first introduced to the use of plastics as visual aids while serving as an instructor in tank flamethrower equipment at The Armored School, Fort Knox, Kentucky. Here one type, called thermoplastic, was used to demonstrate the inner parts of such equipment as flame-throwing guns and the engines of tanks, trucks, and jeeps. These models all had some metal parts in them. These aids revealed what the instructors wanted the student to see functioning. The plastics shop of the Training Aids Department was equipped with lathes and other machinery similar to the equipment of an industrial-arts or vocational machine-shop.

USE OF THERMOPLASTICS

The thermoplastic used is familiar to many. It is used for turrets and noses of planes. When heated to a temperature of approximately 250 degrees F., the material becomes soft and pliable. It can be molded into many different shapes. When cool, it will retain the molded shape. This plastic can be turned, cut, filed, sanded, and polished to give the desired transparent effect. Many vocational and industrial shops in schools are equipped to make these valuable teaching aids.

The use of thermosetting plastic offers even greater possibilities for the classroom teacher. This clear liquid plastic, when heated slightly, hardens into a clear solid. It is an excellent material for the teacher with limited equipment. Procedure for embedding specimens is so simple that junior-high-school students can easily make many mounts as visual aids. By adding a few drops of hardening agent and heating the plastic to a temperature of 110-115 degrees F., for a period of 20 to 30 minutes, a teacher can secure a hard, clear block of plastic material. The specimen may then be placed on this block in the mold. Another quantity of the liquid may then be added and the process repeated until the specimen is completely covered. Shrinking on cooling, the mount drops out of the mold and is ready to be polished.

A school-made oven is easily set up by using the heat from two 100-watt bulbs. Each semester, the eighth-grade students of Roosevelt School in Union City, New Jersey, embed an object in liquid plastic as part of their science work.

The use of transparent plastics for models, objects, and embedded specimens offers many unrealized possibilities for school-made visual aids. They permit the preserving of materials, eliminate the necessity of smelly preservatives, and enable the student to see and understand the complex movements of engines and machines. Thus they can make a valuable contribution to the growing technique of visual methodology. ✪ ✪ ✪

Without a doubt the filling-station type of education is well on its way out. The school, wherein the degree of one's success is dependent upon one's capacity to absorb facts, is definitely out of tune with the demands of the world today. The raw and unsoftened question that falls over our graduates like a shower of cold water is, "What can you do?" Sound education to meet this need must continue to place increased emphasis upon supplementing "factual and principle" education with expressive activities of some type. This philosophy is being developed in several fields of education and has been christened many different names such as "expressionism," "integrated activities," etc. One such experiment in this direction of educational development was the establishment of a *craft room laboratory.*

A Model Making Laboratory

By
D. PAUL SMAY

This original craftroom was established in a janitorial stock room without access to outside light and entirely without any equipment, seats, tables or cupboards. Nothing could have been more primitive than our original set-up, an empty room with four walls. Hardly any school district could boast of less. Before the end of the term the room had grown into a laboratory work shop with tables, bins, shelves, tools and supplies adequate to the construction of projects similar to those to be described. Similar results are within the possible reach of most schools with an alert teacher in charge.

Unquestionably the primal purpose of such a work room was to include in the school program a definite place wherein expression in creative activity was a definite responsibility of both the students and the teacher. Previous to the existence of the laboratory the model-making done by the students to illustrate or develop a unit of work was necessarily done at home, with insufficient tools, equipment, and materials. This inefficiency in the work made it unsuited to all, excepting the very persistent and extremely hard working few. The craft room, by providing the tools, equipment, and materials, made the results achieved more in proportion with the efforts put forth. The creative atmosphere generated by dozens of students working on many different projects was an added incentive to the construction. The help and encouragement of an instructor produces the needed push that prevents a stalling on some of the rough spots. In fact, the presence of such a room and such work was almost symbolic of the inclusion of life's problems into the present-day school.

Several objectives in this experiment were set up and maintained to attempt at least to keep the progress in the right direction. In the first place, the laboratory's existence was based upon the philosophy *"learning is doing."* Children soon sensed the challenge of the laboratory. Their courses in literature, mathematics, science, history, geography, dramatics, health, music, and art began to pay "dividends." The instructors in those diverse fields could point to facts and principles used in the craft room work for which they were responsible. The vitality of their teaching and personality was also directly reflected in the work accomplished. This was an ideal opportunity for the teachers to gain a "kinetic quotient" in the value of their instruction.

Appreciation was decided upon as a second objective. This is a wide and indefinite term. But so was the objective wide and almost indefinite. To some students in the upper bracket of mental strength, the inter-relationship of design, structure, and materials seemed to form the basis upon which their work became an active part of their lives. From that upper strata various appreciation levels filtered down to those whose greatest joy lay largely in the manipulative stages of handwork.

The last, but by no means least, objective was to keep the work, the equipment, and the materials definitely *non-technical.* The hope behind the whole laboratory set-up was that it would merely become a launching place for continuous efforts in the same lines of work. No effort was made to teach skills that would "rust" from lack of continual use. Expensive and hard to get materials would be a crippling barrier to the future work of the students. The equipment chosen and the materials used were well within the means and access of everyone.

Space, equipment, and supplies are the three "spectres" that haunt every new activity in school life. As with any educational effort, cheerful, light, and airy surroundings are conducive to better work. However, the work itself is easily motivated and the "innerglow" generated by creative efforts can convert a dungeon into a drawing room. Also, the less "finish" on a room, the more and more its care can be relegated to secondary importance as regards the work in progress.

The equipment needed will delight a budget-maker's heart. Clay, sawdust, rags, sticks of wood, twigs, crates, pasteboard, shoe boxes, razor blades, yard sticks, tin cans, twine, and wire are as free as the air and are obtainable in every district. Hammers, saws, pliers, drills, putty, knives, screw drivers, and paint brushes are obtainable at any five and ten cent store. This quality is sufficiently good for the work. Equipment for a class of thirty-six amounts to approximately fifteen dollars. Two machines that help tremendously are a used sewing machine and an electric jig saw. Five dollars seems

to be the standard price for a "sub-marginal" sewing machine. A first-class jig saw, equipped with a motor, approximates twenty-five dollars. One-quarter inch ply wood in four by eight foot sheets forms the tops of most of the tables. The cost is approximately one and a half dollars for such a sheet. The expense involved in the under rigging of the table is about one dollar. Such a table is sufficiently large to accommodate a group of eight persons with ease. To stock our "larder" we may purchase two sacks of plaster of Paris, twenty-five pounds of flour, five pounds of flake glue, one sack of lime, one sack of cement, one hundred pounds of sand, dry colors, linseed oil, shellac, alcohol, varnish, turpentine, and bronze powders. These materials just about equip us to rebuild the glories of the ancient world and to produce new wonders yet to come.

The work of the original art room group penetrated the past to the time of the Swiss lake dwellers. They recreated a lake village in miniature, perched on a Lilliputian lake bed with piles made of $\frac{1}{4}''$ twigs pushing up through a wind-tossed surface, made of rumpled cellophane. The Stonehenge arose again under the skillful fingers of three fifteen-year old "giants." The stone sarcophagus of Astarte, high priest of Assyria, was reborn in white plaster, blackened to represent the original basalt, despite the curses that were so carefully transcribed from the original We can watch, unheeded and unseen while tiny Egyptian butchers, bakers, brewers, carpenters, and cattle drovers continue their respective duties in the timeless history of Egypt. The five rows of sweating oarsmen on the Grecian galley still labor for us on the Aegean that has shrunk to a section of beaver board with plastic waves. Time marches swiftly up through history in the craft room to the present where our own city beautifies herself in plaster, paint, and stone, with parks, memorials, bridges, stairways, airports, highways, and public buildings. Modern homes, built by embryonic "Frank Lloyd Wrights" set a goal and establish a need for future civic growth.

The craft room "elbowed" its way into the "indispensable" class in the school with its contribution to the school's efforts in dramatics. Our aims were not one bit desecrated when a Moroccan fortress was constructed to fill the stage for the Foreign Legion to storm. Aeneas and Dido had their tragic lives reinforced with a Greek temple that was largely wire, muslin, and sticks. The glistening helmets, shields, and breast plates of the soldiers had a used paper towel basis to support the metal enameling. A section of the Luxemburg palace helps us to live with the Three Musketeers for three performances. The sparkling diamonds in Cinderella's tiara, rings, and bracelets, lose their magic when we remember that their base was epsom salts. Like the tail of a comet

the craft room followed the "imaginings" of the dramatics department from the past through the present and into the mystics of the future. The glitter of the stage sets began to challenge the sterling silent products in the craft room. The battle is not over.

There need be no searching for the "outcomes" of the craft room experiment. *Socially* the contribution was in forcing teamwork on projects. Leaders, lieutenants, specialists, cooperations, conflicts, disappointments and joys—all come from the group work. Definite concrete efforts in future architectural, and structural needs of the community will bear definite concrete results. *Historically* the experiences break down the concept of the history book as a telescope to view the past. Rather the effort has been an experience of living with those folks of the ages. *Geographically* the "worm's eye" scope of our own vision increases until "Jehovah-like" we can look down from the heights onto tiny railroads, docks, ships, factories, water falls, canals, etc. *Personally* the joy and satisfaction of doing and creating is an ever increasing hunger that makes for a better and fuller life.

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H. FELTBOARDS

When a teaching device makes learning easier, more lasting, and, at the same time, entertaining, it is indeed a valuable instructional tool. The feltboard is such a device. Children love to work with it. Teachers find their instruction is more effective when they use it.

Feltboard

By A. C. STENIUS

The Nation's Schools. Vol. 44, No. 3, Sept., 1949. Pp. 58-61.

The feltboard is just what the name implies, a board covered with felt. Cutouts of felt will stay where placed on the feltboard. This action of felt sticking to felt has a quality of magic about it, but the adherence is merely a matter of wool fibers in the cutout becoming engaged with the same type of fibers on the board itself. When the felt used is specially manufactured to give it adherence qualities, the material, of course, is more effective for classroom use.

There is nothing new about the feltboard. The principle has been used for a great many years. The material has not always been felt, nor have all materials been effective in their use, but the concept of using a type of textile to hold other pieces upon it has long been a means for putting over ideas.

Army blankets have been used with cloth cutouts to rehearse a planned attack. The "flannel-graph" is a fairly familiar item in schools and churches. Slicker, commercially developed boards used in sales training programs by large industrial corporations have even been advertised as "black magic." But there's no

magic connected with the feltboard. It's just a simple and effective teaching tool, one that well might be in every school.

Primarily, the feltboard has been an aid in story telling. As the individual manipulating the felt unfolds the narrative, he puts the various felt pieces on the board to build up an appropriate scene. The full contribution that the feltboard can make to classroom teaching, however, is much greater than that of vitalizing story telling.

In the nature of its use the feltboard can be compared roughly to the bulletin board and the blackboard. It has some qualities of both; it also has characteristics not found in either of the other two. Conversely, both the bulletin board and the blackboard have characteristics and uses not found in the feltboard.

The feltboard, like any teaching tool, has limited applications. As compared with a bulletin board display, a feltboard presentation is less permanent. On the other hand, where the bulletin board needs thumb tacks, pins or cellulose gummed tape to be used effectively, the feltboard needs none of these. The pieces stay as placed on the board without the help of any pointed or sticky material.

In general, the feltboard has characteristics that quickly win most teachers. It is an ideal tool to use with youngsters in the early primary grades. There is no mess or muss involved in its use. Children can participate in setting up displays upon the board without using any materials except the cutouts and the board itself. This "magic" aspect of the feltboard invites pupil participation more than most teaching aids do. Drill work becomes fun, yet at the same time it becomes effective teaching.

Although the feltboard has been used with value on the university level, its primary appeal and contribution are for teachers in the elementary schools. The "why" of its appeal and the "how" of its use probably can be explained best by a description of certain classroom uses of the medium that I have observed.

In one classroom the teacher cut out an apple tree of simple silhouette design. The top was made from green felt, the trunk from brown felt. She also cut several apples from brilliant red felt. At this point it may be appropriate to mention that the color appeal of felt materials is one of their outstanding values.

The pupils for whom this apple tree was made were first grade youngsters. The teacher was explaining number concepts. For a brief period she placed apples on the tree and a certain number on the "ground" portion of the board. The children then identified the number of apples on the tree, the number on the ground, and the total number as well.

After a few minutes the teacher changed the pattern so that pupils, once they had given the proper number of apples, were given the opportunity of "shaking" the tree so that the number of apples in the tree and on the ground changed. The pupil who had made the new problem was then given the privilege of calling upon a classmate for the answer.

Through these procedures the teacher was able to conduct effective and interesting drill work relative to number concepts and to the basic arithmetic processes.

HALFWAY TOWARD ABSTRACTION

The contribution of the feltboard in this instance did not stop with making drill work interesting and effective. The medium was making another contribution. In such an instance the feltboard makes an ideal intermediate step between real objects and abstract concepts to be worked with on paper or on the blackboard. The felt apples had a three-dimensional nature in that they could be handled by the pupils. The apples could be picked up from the ground; they could be shaken from the tree.

The apples also had a two-dimensional aspect. When in place on the feltboard they were similar to blackboard representations. For this reason teachers often will find the feltboard the step that is needed with most children in moving from actual objects to more abstract presentations on the blackboard.

The type of drill work previously described can be varied nicely. It can be made appropriate to the season. A rabbit with 12 colored eggs can be used effectively around Easter time. Snowmen can be counted during the winter months. The apple tree previously described can have leaves as well as apples, or birds can "nest" in such a tree.

Small cutout houses can be used in much the same manner. "How many houses must we pass on the way to school if we go this way?" or "How many houses have one window, how many have two windows?" Use of materials in this way not only gives variety and effectiveness to drill work but makes learning easier and more lasting.

One of the most important characteristics of the feltboard is that it can be used in ways that fit any individual teacher's approach to subject matter, such as to basic arithmetic processes. There is no "system" which one must follow when using the feltboard.

In this respect it has much the same quality of flexibility as have the blackboard and the bulletin board. Although commercial cutouts, such as those referred to previously, are available at reasonable cost, the teacher also can cut out materials of her own with little difficulty.

FRACTIONS WITHOUT TEARS

In more advanced grades the feltboard also can make contributions in the teaching of other aspects of arithmetic. The understanding of fractional parts can be "put across" with the help of the feltboard. Because felt pieces not only will adhere to the feltboard itself but will stick on other felt pieces, children can actually see the difference in size between a fifth and a sixth of a given whole.

Such concepts as "a fractional part grows smaller as the denominator grows larger" are readily accepted by children when they can actually see that eighths of an item are smaller than sixths of the same item. With the feltboard medium, it is easy to visualize the equality of two-fourths and three-sixths. The teacher has little "explaining" to do. A child manipulating felt pieces and making two halves from different fractional parts teaches himself in the process.

Some misconceptions about fractions can be headed off by the use of felt cutouts of fractional parts. Squares cut into fractional parts in different ways (diagonally, in horizontal strips, or in squares) provide the teacher with an instructional tool that gives children an understanding of the fact that not all fractional parts, though of the same value, take the same shape. When only circular pieces are used, analogies of pie and cake cutting too often give the pupil the idea that all quarters are of the same shape.

In the field of reading readiness and reading, the imagination of the teacher is probably the only limiting factor in the use of the feltboard. The medium's contribution ranges from stimulating oral composition to the recognition of the concepts behind prepositions.

PREPOSITIONS EXPLAINED

One elementary teacher whom I have observed worked out a set of small animals and a scene consisting of a tree, a fence and a house. Pupils placed the animals in positions indicating the meaning of various prepositions she displayed.

In the same way, words that matched silhouette cutouts of a girl, a boy, a dog, a table, and a chair were used to help other youngsters understand concepts that lie behind these words.

The feltboard is an ideal aid for the teacher who wishes to stimulate oral expression on the part of pupils. When cutouts resemble or represent characters in some story familiar to the children, such cutouts will be a great help in getting pupils to tell the story or to comment upon certain incidents in the narrative. Original stories also can be worked out in this way. Boys and girls can make their own cutouts or use silhouette figures that can be put on the feltboard as different phases of the story develop.

The feltboard gives the art teacher a new medium of expression. It is also an ideal demonstration device for her. Cutouts of art forms, such as circles, crescents, ovals, triangles and rectangles, can be used on the feltboard to develop pupil recognition of these shapes.

The feltboard also aids in developing color recognition in youngsters in the early elementary grades. Because felt is available in all primary and secondary colors as well as tints and shades of each, discrimination in color recognition can be pushed as far as the teacher believes feasible.

Such teaching can be done in a formal manner, if desired, by use of disks cut from a variety of colors of felt. This type of teaching, however, also can be effective when other approaches are used. One teacher uses a clown cut from felt who juggles balls of different colors. Whenever a child is able to name a "new" color, he is permitted to give the clown a ball of that color to juggle.

Another teacher has done somewhat the same thing in making a balloon man and giving children an opportunity to add balloons when a new color is either thought up or recognized from a set of colored felt disks.

The feltboard and a variety of odd shaped forms cut from felt will help many a pupil express himself, while the commoner drawing materials fail to do so. Some individuals mature slowly in their muscular coordination, and their attempts to express themselves artistically are frustrated because of their inability to control the pencil, crayon or paint brush they use.

In this respect felt materials have been used with a great deal of success by teachers in special education whose responsibilities include the teaching of brain-injured children or others who have great difficulty in controlling their manual movement.

The ability of a child to adjust a piece of felt on the feltboard is a great stimulus to him in arranging some type of picture or pattern that he sees in his mind. Because the felt will not fall and may be adjusted on the board even though the hand trembles or is extremely jerky in its motions, it is an ideal medium for teachers dealing with such handicapped children.

The illustrations of using the feltboard that have just been given are in no way exhaustive. The feltboard is no more limited in its application to various types of subject matter than is the blackboard.

USED IN UNIVERSITIES

Although the feltboard seems to make greater contributions in the primary grades than it does on other school levels, university professors have used it suc-

cessfully in lecturing on such subjects as the molecular structure of matter. Psychologists have used it for projective testing and psycho-drama work. It is ideal for coaches who wish to illustrate new formations or to check individual players on their positions in certain plays.

One of the ideal features of the feltboard is the reasonable cost of both board and material. The board itself can be constructed in any school shop or can be bought at a low price from commercial sources. The same is true of felt cutout materials. Because many of the commercially produced standard sets can be purchased at small cost, it is probably advisable that only those materials that have individual application and need should be designed and cut out by the individual teacher for her own class use.

The feltboard is no all-purpose tool. Neither is any other instructional device. However, when the feltboard is applicable, it is an aid to learning that stands second to none in its effectiveness.

The feltboard is simple and its cost is low, but the teacher who uses it will find its contribution to be greater than that of many pieces of costly mechanical equipment. She will discover that its use will help children learn faster and retain their knowledge longer. And, after all, are there any more important standards by which to judge a teaching tool?

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From Peter Rabbit to football practice plays, from number concepts to foreign language vocabulary building, from music staffs to menu planning, uses of the flannel board were explored by committees in the classes of Elizabeth Goudy Noel at the College of the Pacific, Stockton, California. An audio-visual aid which is inexpensive, readily available, and adaptable to many areas, the flannel board is designed to add variety to teaching and to motivate interest.

Flannel Board Fun

By G. WESTABY

Looking like a fuzzy bulletin board, the flannel board may be used on an easel or propped up in the blackboard chalk trough. It's a piece of board covered with flannel on which pictures backed with flannel stick when smoothed on. It's the nap on the flannel that holds the figures to the board.

You can buy a flannel board. If you are budget-minded, it is easy to make one for your classroom. A two foot by three foot size is convenient to handle. It may be made of Masonite, Celotex, plywood, or you may use heavy cardboard. After the board has been cut to size, round off the corners with a file so they won't break through the covering.

You'll need two pieces of flannel the same size as the board. Machine-stitch them together pillow-case fashion, leaving one end open. Turn the case inside out and slip it over the board. It should fit tightly. The ends may be tucked in, basted shut, or snapped together. Such a cover is easily removed for washing.

Other materials than flannel may be used to back the pictures you use on a flannel board. Coarse sandpaper, pieces of felt, suede, and velvet, corn plasters, or flocking serve the same purpose. Be sure a sufficiently large piece of backing material is glued into place to hold the picture on the board when it is smoothed on.

If you want to tell a story with pictures on the flannel board, get two copies of the book from which you'll cut the pictures. Dime stores have many fine books for this purpose. If you don't know the story well, maybe you'd better get a third copy to read from. Cut out the illustrations, paste or glue on the backing you have chosen, and you are ready. As you read or tell the story, your helper places the proper illustration on the board, smooths it down, and it will cling there until it is "picked off." If the pictures you are using are especially flimsy, mount them first on construction paper before applying the backing.

Then let the children tell the story and move the figures to illustrate it. Some will want to make up their own stories to go with the illustrations. A few will want to create both their own stories and their own illustrations.

Number concepts may be taught using the flannel board as one teaching device. Cut numerals from felt (these will not need backing) and let the children match them with corresponding pictures. The 1 is placed next to one fish, 2 next to two trees, 3 next to three leaves. Good groups for such pictures may be clipped from number game books. Felt may be bought in 4″ strips, and you may make many numerals and other objects for playing number games.

One matching game involves using colors, shapes, and sizes. A large red heart has a small red heart cut from the center of it; a pink square has a small pink square cut out from it; a green triangle has a smaller triangle cut out. The teacher places the larger shape on the flannel board and the student selects the correct "answer" in the right shape, color, and size to fit the opening in the larger figure.

Music teachers use it with a permanent staff pinned on made of strips of felt, and with musical symbols of felt added for the song studied. Notes in quarter, half, and whole note values are cut from felt and placed in the proper places on the staff.

Foreign language teachers use it in teaching new vocabularies. Mathematics teachers use it to teach concepts of wholes, halves, and quarters, while circles can be divided into pie-like sections for the teaching of fractions. One football coach plans skull-practice with a flannel board, moving the figures of the players about as he explains plays.

Student participation is possible in all stages of flannel-board work. They like making the figures and manipulating them in the games they make up.

So all you need for this audio-visual aid is a board, two pieces of flannel, and a little imagination. You'll find the imagination working overtime, with the students suggesting many new ways to use this aid that even your room can afford.

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I. FLAT PICTURES—PHOTOGRAPHS

The modern school is a child centered school. In it, the emphasis is placed on teaching the child rather than on merely teaching the subject. The three R's of the old school are now supplemented by three new R's which we may call:

Vitalizing Teaching Through the Correct Use of the Still Picture

By M. MERTON

REALITY: So that learning will have real meaning and understanding;

REASONING: So that students will be trained to think and form judgments rather than merely to memorize the abstract words of the text, and

RESEARCH: So that children are encouraged to investigate and to seek enrichment of learning.

Visual aids have contributed richly in realizing these new trends in education. By providing rich illustrative materials they have brought reality into learning; by providing true facts to form the basis for clear thinking they have improved the reasoning of students and by arousing interest they have stimulated research.

Perhaps the greatest value of visual aids is that they build on pupil's past experiences, and when these experiences are limited, visual aids provide substitute or vicarious experiences which serve as the background for interpreting the new work to be learned. It has been said that the basis of all thinking is experience. Each child interprets the spoken words of the classroom and the written words of the textbook by means of his own past experiences. What he has seen and what he has experienced provide his background for word understanding. An educator has said that when we teach we stand upon a scaffolding just as the carpenter and painter stand upon a high wooden platform when working on a building. The scaffolding upon which the teacher stands is the child's past experiences. When we teachers step off this scaffolding by failure to consider the child's past experiences, we ought to get the same kind of a jolt that the carpenter or painter would get if he were to step off his high wooden platform. Unfortunately some classroom teachers step on and off this child experience scaffolding without even being aware of its existence and it is the child who loses thereby.

The fewer real experiences our students have, relating to the subject we teach, the more important it is to use visual aids to help them develop correct initial concepts and prevent the forming of false and inaccurate interpretations.

How can we use visual aids most effectively in teaching? Each visual aid has its own particular advantages and also its limitations in various teaching situations. Some are more effective at one stage of the learning process than at another. It is a great problem to determine in what specific situations in learning each will render the greatest service.

The most universally used visual aid in the classroom is the still picture. We use it constantly in textbooks and reference books, in mounted pictures, and projected pictures such as lantern slides and opaque projection. For this reason we are vitally concerned with the need of training teachers and pupils in using and interpreting these pictures most effectively. Too often a teacher shows a picture and considers it self explanatory and concrete when the picture actually may be filled with abstractions for the child.

Our problem is: How can we use our still pictures so that students will get the most accurate and complete understanding from them? How can we help students read into a picture facts which will make it meaningful? Too many pupils are allowed merely to look at pictures which is far different from studying and interpreting them. A picture, like the printed page should contain material for thought and study.

The student who has travelled through the mountainous region of our west and looks at a picture of a mountain canyon can read into it the depth, size, color which makes the picture a vivid experience to him. But what of our students of limited experiences whose lives have been confined to their immediate surroundings?

The guidance of the teacher is needed to train these pupils to interpret pictures comprehensively. There are several factors about a picture which it is well to train children to consider:

Size: A picture is of greatest value when there is something in it which is familiar. A person, auto-

mobile, house, or known animal are essential in some types of pictures if an idea of height and size of an unknown object is to be grasped. The teacher should help the child to gain the habit of looking for something of which he knows the size and then using that to help interpret the size of an unknown object in the picture.

One of the greatest difficulties in using pictures is that frequently there is something in the foreground which looks so large that it gives a misleading concept of the true size of an unknown figure in the background due to the fact that the distance between the two is not known to the child. Still this distance is a most significant factor in understanding the true dimensions of the unknown object. The teacher must take special pains to see that the child understands the true size in pictures such as these.

How important it is for us to judge the teaching value of pictures from the standpoint of a known factor of size! First, we must look for pictures with known factors of size. Second, if the pictures do not show known factors, we must look to see if the legend under the picture will help the child to understand the true size. Third, in the absence of both of these the clear vivid description of the teacher must give the child some idea of true size.

Temperature: Another abstraction which the teacher must help the child to overcome is that of temperature. The child must read into a picture of a jungle the intense humidity and heat, the lack of any breeze and the sultry sticky warmth which causes this dense vegetation.

One must also read temperature into a picture of a spouting geyser. Does the child realize that this is hot water being hurled into the air? Last summer I received a letter from a friend who stood too near to a geyser that suddenly spouted and this person was seriously scalded and suffered excruciating pain for several weeks. In a picture of a geyser we should also call attention to motion. Is the geyser like a fountain continually shooting steam into the air? The child must realize that this takes place only occasionally, some every few hours, others at shorter intervals.

Motion: Motion should also be read into a still picture of a ship passing through the locks of a canal. The picture shows the boat only at the time the camera was flashed. It does not show how the water in the locks is raised or lowered and how the boat moves from one of the locks to another. This will have to be described to make the picture have real meaning.

Sound: There is the abstraction of sound in a picture of Niagara Falls. Such a picture does not become an experience for the child until he reads into it the sound of the roaring waters dashing over the steep precipice. Only the vivid description of the text or the words of the teacher can help him to fully comprehend this.

Another illustration of the need for describing sound is in pictures of factories where the noise and din of the machinery is almost deafening.

Distance: Still another abstraction in pictures we must help pupils to overcome is that of distance. Does the child really grasp the miles and miles covered by the winding stretch of wall in a picture of the Wall of China?

Depth: Probably the most necessary factor in understanding a picture is reading depth into it. Pictures show only two dimensions: length and width. They cannot show the depth that the human eye really sees.

We have access to a visual aid which shows depth. It is the stereograph and the stereoscope. The stereograph is the double photograph and the stereoscope is the instrument through which the picture is seen. When the double photograph is seen through the lens of the stereoscope it shows depth.

To illustrate how real a picture becomes when it is seen through a stereoscope, I will mention a true incident. A boy was given a stereoscope in which had been placed a stereograph of a man standing on a high ledge. The boy became so absorbed in the picture that when the teacher came up unawares and touched him on the shoulder he jumped back in fear because he thought he would be pushed off this high ledge by the slightest touch.

The following are types of pictures which should first be shown through a stereoscope to have the student understand depth: Pictures of mountain canyons, airplane view of cities, the depth and structure of glaciers, the architecture of great cathedrals, the beauty of underground caverns, mountain peaks and valleys. After students have studied such pictures in the stereograph they will be able to read depth into two dimension pictures of those scenes.

The stereoscope is to be used for individual study. It should not be passed from student to student during class recitation periods. When used for individual study the child actually imagines himself in the setting which the picture portrays.

Color: The teacher needs to help the child to sense color when an uncolored picture of the Grand Canyon is shown. The student must read into this picture the beautiful colors of the rocks to fully appreciate this spectacle. Color must also be read into a picture showing an uncolored picture of a cotton blossom, or an uncolored picture from which the child is expected to appreciate the colorful costumes of some foreign country.

Odor: The odor of a paper mill should be called to the student's attention when a picture of a paper mill is shown, or in contrast the delightful color of a field of narcissus in bloom in Holland. Just as a paper mill town can be identified from a distance by the peculiar odor of its paper mills, so the communities where fish are dried in the sun can be identified by the strong fishy odor which saturates the air of the community. This should be called to the child's attention when pictures of such localities are studied.

Speed: In our age of speed in transportation, does the child looking at a picture of an ox team comprehend the slow, plodding gait of the team pulling a crude two wheeled cart? Can he have any comprehension of the number of miles this team can go in one hour?

Weight: As the child looks at a picture of Philippine workers carrying baskets of potatoes on their heads does he merely see people and baskets and potatoes or does he comprehend the great weight of these large baskets being strapped to the heads of young Philippine girls?

A great contribution which all classroom teachers can make in the field of visual education is to train pupils to overcome the limitations and abstractions of pictures, so that students may more effectively use and interpret the picture material in their textbooks, reference magazines, encyclopedias, and also the commercialized aids that are used to further enrich their work. When students during their study periods will study pictures as intensively and thoughtfully as they do the material from the printed page, we will have indeed vitalized our teaching.

Very often a single picture is not adequate in showing a teaching situation since a single picture can show only one step in a process or show a scene from only one angle or at the moment the camera was flashed. This is often true of textbook pictures since textbooks cannot provide enough space to show a complete series of pictures for an industry or region because of the extensive content they must cover.

An example of what might be given in a textbook is a single picture of the making of pottery. Just how does the potter's wheel work? How fast does the plate turn? What steps were necessary before this stage in the making of the plate was reached? All of these questions must be answered either through a series of pictures on the making of pottery or by the clear vivid description of the teacher. She will have to supplement the gap by collecting and building up a series of pictures that will show different steps in an industry, or different views of a region, or stages of a process.

One of the finest things that can be done is for the teachers of a building to work together to make a building library of excellent pictures. Each school should contain a three to four drawer filing cabinet filled with catalogued pictures of teaching value. Good firm mounting boards in attractive colors should be secured so that the pictures may be well mounted before filing. These pictures may be used advantageously in opaque projection and also provide attractive and interesting bulletin board displays.

Teachers frequently make the mistake of using too many slides or pictures for one lesson. In a developmental lesson only a very few should be used. However, at the close of a unit of work a larger number of slides would be justifiable as they would be used to recall and fix definitely work that has been taught and to help students to organize this body of knowledge.

In closing I wish to state that it is not my purpose to minimize the value of other visual aids by not referring to them in this discussion. Their effective use and great value would require a discussion in itself. I have wished to show how the correct use of the still picture may be used to enrich and vitalize our teaching and also give valuable learning experience to our students.

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Pictures do not possess mystical powers to teach, in and of themselves. The skill with which a teacher selects a picture and uses it determines its effectiveness. Basic to such skill is a knowledge of criteria for judging pictures, and practice in applying pictorial materials to specific educational purposes.

A Kindergarten- Primary Picture File

By
F. DEAN McCLUSKY
The Instructor. Vol. 63, No. 5, Jan., 1953. Pp. 29-30.

I have examined picture files in school libraries and classrooms. With a few exceptions they are organized by topics: Transportation, Boats, The Airport, Community Workers, The Farm, The Dairy, Animals, Insects, Geography, and American History. Inquiry has revealed that the standards governing their selection are often remote from pedagogical concepts. Pictures are deposited in the file because they "might be of use sometime" or are "unusual" or "artistic-looking" or "colorful" or "attractive." In general, the criteria governing the selection are based on the intuitive judgment of the collector.

I am not attempting to give the impression that such a picture collection is of little value. Many pictures from a file like this find a place in dressing up the bulletin board, in illustrating scrapbooks, and in showing students what a scene or object "looks like." It is my purpose, however, to indicate that there is a

more fundamental approach to the development of worth-while picture files for instructional use.

During the past year at UCLA, Professor Lorraine Sherer and I have been directing a study of the types of pictures suited to teaching kindergarten-primary children. As a first step we asked our student teachers to select a group of pictures (photographs, sketches, paintings, drawings, diagrams) to be used in connection with significant activities: dramatic play; experimentation; construction; taking field trips; and activities involved in specific learnings such as reading, increasing vocabulary, developing number concepts, and comprehending relationships with social groups.

Pictures of all kinds, sizes, and descriptions were submitted, without regard to the criteria found in the assigned reading. Words such as *quality, authenticity, correctness, relevancy,* and *timeliness* were too abstract to be of value as standards. It was clear that we had not only a problem of evaluation but also a job of teaching at hand.

We mounted on the bulletin board a cross section of the pictures which the students had selected. Each student who had had a picture posted was asked to defend its selection in terms of intended use. The group then discussed the picture from various angles and arrived at a judgment concerning its value.

We asked "How would you use it in the planned activities before or after a field trip? Why would it make a good reading chart? How would it stimulate dramatic play? How would it be helpful in construction activities or in experimentation?"

We soon discovered that the students lacked skill in reading pictures from the point of view of pedagogical values. Questions based on the information in the pictures showed a lack of knowledge about many of the relationships shown. For example, few knew the purpose of the cupola on a caboose, or on which side of the locomotive the engineer sat, or what was meant by the *load line* on a ship. Finally, it was shown that there was a scarcity of suitable pictures in practically all primary grades.

We soon realized that in order to teach a generalized understanding of criteria for selection we must use visual techniques. The students needed to study many pictures by analyzing, comparing, and seeing the essential differences before they could intelligently evaluate their tentative selections.

One student had selected a photographically dramatic picture of a passenger train. It was headed by a Diesel locomotive rounding a curve. The perspective made the locomotive loom large with the cars behind merged into long diminishing lines lacking detail. This picture had been selected as helpful in construction activities. Analysis of the picture resulted in the group's voting against its use for con-

struction. We decided that its chief value would be for posting on the bulletin board to give atmosphere during the study of transportation.

Another picture, in color, of a corner automobile service station, was submitted as having value in stimulating dramatic play. Careful study of the picture resulted in the group's voting in favor of its use for construction activities, but not for dramatic play. It showed the layout of a gas station, which would be valuable to children building a simulated station, but it did not depict what the men were doing in enough detail so that children would see accurate patterns on which to base their dramatic play.

We agreed that if meaningful activity was shown in a picture, it would be useful in stimulating dramatic play, assuming of course that the content suited the needs and interests of the children.

The pictures best adapted to construction activities showed a clean-cut layout of a harbor, farm, or fire station, for example, with all the essential elements and relationships clearly indicated.

A picture telling an interesting story which could be described in a vocabulary at the desired grade level was considered best for a reading chart. It was agreed that the reading should center on things shown in the picture.

Pictures adapted to field-trip activities were those showing clearly what to look for, or reviewing what had been seen.

Other generalizations based on our study were as follows.

First, picture folios can be developed using pedagogical values as the major classifications. Subject-matter classifications can be listed as subdivisions. The major classifications at the kindergarten-primary level would be dramatic play, construction, problem solving, and so on, with subdivisions, such as transportation, the dairy, pets, and community helpers.

Second, the development of picture folios is a continuous, growing process. Improvements in the selective criteria are made after pictures have been tested on the anvil of classroom experiences.

Third, some pictures are valuable for creating an environmental atmosphere while others contribute content.

Fourth, a good content picture must be accurate, specific, and easily viewed as to essential detail. If a picture is of a brakeman coupling two cars it should show what he is doing and not a view of his back which blocks out the action.

Fifth, pictures are important sources of background information for the teacher as well as the pupil. If there is a doubt about the accuracy of a concept which children express in any activity, au-

thentic pictures may serve as excellent reference material.

Sixth, a picture must have carrying power if used with a group. It must be seeable in all essential details by the farthest viewer. Simple pictures generally can be seen. Pictures cluttered with detail cannot.

Seventh, if there is doubt about the value of a picture, it should be discarded. A good picture file is the product of intelligent, long-range planning by a resourceful teacher who can make it an invaluable aid to instruction.

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In this study, the term, "picture," applies to photographic enlargements, either mounted or unmounted; actual photographs or illustrations collected from magazines and newspapers; photographic textbook illustrations; and mounted or unmounted photographs which the teacher may have purchased or had made from original negatives. Of course the score card which has resulted from the study may apply in part or in whole to other types or representations such as lantern slides, stereographs, and opaque projections but the study was undertaken primarily for the purpose of establishing standards for evaluation of pictures as defined above.

Evaluation of Still Pictures for Instructional Use

By
LELIA TROLINGER
Chicago: The Educational Screen, 1939. Pp. 6-12, 19.

JUSTIFICATION OF THE USE OF PICTURES IN TEACHING

The value of pictures in education has become a generally accepted fact. Different authors discuss different aspects of pictures, but all recognize in pictures an important aid to teaching. It is generally conceded that pictures are more used than any other type of visual aid because of their availability and abundance. The following quotations have been selected because they summarize briefly the opinions of many prominent educators of the past decade on the value of pictures in education in general and in classroom teaching specifically. The claims made by different authors are interesting and varied.

William H. Johnson[1] states that: "The flat picture has been recognized as an aid in the transmission of ideas since the time of prehistoric man. It is, in fact, quite certain that picture writing preceded our present alphabet . . . Because of its interest-holding qualities, its directness of appeal and its cheapness, it is one of the most used forms of visual aids."

J. J. Weber[2] approached the subject from a little different angle. He states that the rich experience of home life fifty years ago gave the child a fund of varied experiences upon which to base his learning. The complex life of today fails to provide that basis for an understanding of the fundamentals of every day living. The school has to provide those experiences and photography offers much to help overcome the deficiencies. He says: "Since the printed word is just a symbol, it has meaning only when the pupil has a ready fund of experience to interpret it and it invariably suffers some loss when it is re-translated in terms of his more or less limited imagery. The photograph, on the other hand, does not fail to transmit the realism of the situation, but goes even a step farther and serves as a stimulus that results in what is called vicarious experience."

Thralls and Reeder[3] offer the following addition to the general assumption that pictures make a valuable contribution to learning: "The use of pictures is one of the economical mediums for the conveyance of ideas. It economizes both time and effort . . . It (the picture) brings the required idea into the pupil's consciousness at once, just as the actual experience does. As a result, the ideas or images secured are more accurate."

Despite the popularity of motion pictures and other newer types of visual aids, most recent writers continue to place still pictures in the front rank of visual aids. Hoban, Hoban and Zisman[4] say: "Teachers have realized the value of prints and photographs for many years, and illustrative materials are frequently mounted or placed on the bulletin boards. They have not realized, however, that these pictures like other visual aids are not in themselves instructive, that pupils do not always see the significant features of a picture, and that pictures should be selected for teaching purposes according to certain definite criteria. Interpretation is always the keynote. Not all prints are good instructional media, despite the appeal of pictures to younger children. They are, however, the most available of the pictural aids to teaching, and their systematic use greatly enriches the learning process."

Numerous similar statements might be included but it seems unnecessary. Educators, if they can be judged by their books on methods in various subject-matter fields, are generally agreed upon the value of

1. Johnson, William H., *Fundamentals in Visual Instruction,* Chicago: Educational Screen, Inc., 1927, p. 42.
2. Weber, Joseph J., *Picture Values in Education,* Chicago: Educational Screen, Inc., 1928, pp. 101-103.
3. Thralls, Zoe A. and Reeder, Edwin H., *Geography in the Elementary School,* New York: Rand McNally Company, 1932, p. 393.
4. Hoban, Charles F., Hoban, Charles F. Jr., and Zisman, Samuel B., *Visualizing the Curriculum,* New York: Cordon Company, 1937, p. 14.

visual aids in instruction. Also among all aids mentioned, pictures rank high in availability, in ease of use, and in effective teaching.

CRITERIA SUGGESTED BY DIFFERENT AUTHORS FOR JUDGING PICTURES

Despite a long period of use of pictures in teaching, it is surprising how few teachers analyze pictures and carefully select those which have direct application to the subject being taught. The lack of analysis by teachers, however, is less surprising when a survey of the literature is made, disclosing the dearth of standards against which a check can be made by an inexperienced or untrained teacher. A few nationally known teachers and writers in the field of visual instruction have set up tentative standards for judging various types of visual aids. A consideration of some of these standards will aid in an understanding of the characteristics which are later used in this study.

Dorris[5] discusses the subject as follows: "What are the qualities requisite in pictorial illustrations? The two most important ones seem to be clearness, or definiteness of outline, and simplicity of composition. Color is also important. Pictures are used mainly to convey correct mental images of persons, places, or things, in order that these new concepts may form the basis for judging and comparing new situations. Teachers cannot be too careful, therefore, to select pictures that convey whole truths, not half-truths . . . Color, when truthfully used, adds much to the reality and effectiveness of most pictures. But it is far better to eliminate color unless it is handled artistically and truthfully . . . Complex pictures tend to distract the attention and the interest thus weakening the value of a picture."

At the same time, Dorris condemns the use of pictures which are poor in quality, complicated in composition, unsuited to the mental age of the child, or do not apply to the specific teaching situation.

Thralls[6] in an article on the selection and use of pictures for geography teaching offers the following criterion: "An ideal picture of high geographic quality should show a human activity in its natural setting."

Weber[7] adds another thought in his statement: "Adults, because of their rich and varied experience, do not realize the importance of having the area of the picture images approximately the actual size of the object. Yet this is absolutely necessary, unless the image is accompanied by images of human beings and other familiar elements, which by comparison, will suggest proportions to the imagination of the child."

Thralls and Reeder[8] suggest that in choosing a text, among other things to be considered, are the following: "Are the pictures, sketches, diagrams, graphs, etc., clear, attractive, and worth while?"

And Dent[9] included similar ideas in his statement: "Two simple criteria to be observed in selecting pictures for either pupil or teacher use should be to employ only pictures which pertain to the subject and only enough pictures to illustrate the point clearly."

Commenting on recent studies and reports on the subject of criteria for judging pictures, Emmert[10] offers pertinent suggestions: The flat picture (used here, for lack of a standardized term, to mean an unprojected picture) is the most familiar form of pictorial presentation today, existing as it does in a variety of forms, as in the newspaper, the magazine, the textbook, the photographic print, lantern slide, the billboard, the window displays, transparent plates, etc. It is destined to become a necessary part of our symbolic language of education. Since it is the least abstract of symbols, it portrays scenes outside the child's view in such a manner that, vicariously, he can readily and effectively develop the proper mental images for the situation depicted . . . A number of research studies have been conducted to determine the characteristics of pictures suitable for classroom use. Other persons out of long experience in teaching, have drawn up standards for selecting and evaluating flat pictures for teaching purposes. In general they emphasize the necessity of having pictures that fit into the curriculum, that are strong in contrast, contain a chief center of interest, strong artistic rhythm of lines, building up a background of atmosphere for topic under discussion, stimulate aesthetic feelings, and are truthful."

In a bulletin[11] a few years ago, by a committee on visual instruction in New York State, several criteria worth considering were suggested: "(a) Examine the source from which the picture is obtained with great care. (b) Check the picture as to accuracy of color and recency of publication . . . (c) The more simple a picture is the more value it has for teaching purposes, as presentation, representation, or clarification

5. Dorris, Anna V., *Visual Instruction in the Public Schools*, New York: Ginn and Company, 1928, pp. 46-49.
6. Thralls, Zoe A., *The Selection and Use of Pictures*, Journal of the National Education Association, Vol. 21, No. 8, November, 1932, pp. 247-248.
7. Weber, Joseph J., *Picture Values in Education*, Chicago: Educational Screen, Inc., 1928, p. 52.
8. Thralls, Zoe A., and Reeder, Edwin H., *Geography in the Elementary* School, New York: Rand, McNally Company, 1932, p. 382.
9. Dent, Ellsworth C., *A Handbook of Visual Instruction*. Published by Brigham Young University, Provo, Utah, 1934, p. 23.
10. Emmert, Wilber, *Standards for Selecting and Evaluating Still Pictures*, Chicago: Educational Screen, December, 1937, pp. 317-318.
11. *Visual Aids in the Schools*, Bulletin IV, New York State Association of Elementary Principles, December, 1935, p. 34.

of one idea or at the most a few ideas at a time is all that is hoped for by a good teacher."

A. W. Abrams, whose death occurred recently after a long period of service in visual instruction in New York State Education Department, was a member of the preceding committee. In a series of articles in the *New York State Education*,[12] he suggested truthfulness, authenticity, quality, significance, and attractiveness as important points to be considered in the selection of a picture.

All the quotations in the former paragraphs were based on the judgment of the writers. These men and women are well-known in their fields of education, and their opinions carry weight. However, none of them have offered experimental evidence to support their suggestions. It is a pleasure to report on one study which attempted to secure experimental evidence on criteria for judging pictures which are to be used for instructional purposes. In his book in 1926, A. P. Hollis[13] explains a score card which he prepared with the help of eight men and women who were constantly working with pictures. His score card is the most complete and concise found in any publication which was checked. Why it has not been more widely used is unknown. Perhaps a contributing factor was the fact that the chapter dealing with the score card for judging pictures was included in a book, *Motion Pictures for Instruction*, and the average teacher is not likely to look in a book on motion pictures for a score card for still pictures.

Hollis' own words regarding the need and the set-up of the score card are better than comments: "A considerable body of literature exists which has for its purpose the evaluation of pictures which are works of art . . . No such study has been made of the purely information pictures, where the purpose of the picture is to convey information of a definite type rather than to appeal to the sense of beauty or other related emotion.

"Pictures are now used so largely to supplement textbooks, manuals of instruction, magazine and newspaper articles, that we regard them as necessary adjuncts to practically all forms of instruction permitting of any appeal to the eye.

"The writings of pedagogs contain frequent reference to the use of *good* pictures, and young teachers are urged to the use of *good* pictures at suitable points in instruction, but they are not told what good pictures are . . . Usually educators will pick out pictures (1) that pertain to the subject in a general way, and (2) that are clearly printed. Very often another quality unconsciously dominates the selection, namely, (3) the artistic quality, sometimes to the detriment of the first two more important elements. These do not constitute analytic principles of selection."

Hollis secured the opinion of eight competent judges, including A. W. Abrams, E. P. Parker, W. W. Atwood, and others of considerable note, from both the commercial as well as the educational world. He classified their suggested essential qualities of a good picture into six general groups, Truth and Authenticity, Relevancy, Concentration, Power to Provoke Thought, Technical Quality and Artistic Quality. Later these six qualities were reduced to four and the following score card was given:

1. *Truth and Authenticity,*
    Are the facts true, or well vouched for?
2. *Relevancy.*
    Does the picture illustrate the particular topic under discussion?
3. *Concentration.*
    Does the picture direct attention to the significant facts, or are they obscured by unimportant details?
4. *Technical Quality.*
    Clear definition (focus); good distribution of light and shade, freedom from blemish.

Hollis mentions in his book that the score card was tested by several classes at the University, but gives no details as to the method, and very meager results of the test. He says that, "(1) The ranks assigned and the points on the tentative score card were sustained by all the judges by percentages varying from $55\frac{1}{3}$ to 75. (2) Criticisms of the score points by the judges suggested a reduction from 6 to 4 main points for ordinary use, when the question of time is a vital one."

Later in reply to an inquiry from the writer concerning the method used in the experiment Hollis adds the following: "In getting the six major points for the score card, I did not use any picture myself, but framed them from the score cards of the educators mentioned. When it came, however, to testing the score card, I secured permission from the faculty of the University of Chicago to let me go into classes and exhibit with slides typical informational pictures, instructing the students to use the score card in judging the pictures. The results, as stated in the book, are all positive, so that the score card emerged from these tests in the form given on page 205."[14]

12. Abrams, Alfred W., New York State Education, Vol. XIX, October, 1931, *Some Fundamentals of Visual Instruction*, pp. 48-49; December, 1931, *Stndards for the Selection of Pictures*, pp. 281-283-334; April, 1932, *Analysis of a Picture*, pp. 661, 711-713.
13. Hollis, A. P., *Motion Pictures for Instruction*, New York: Century Company, 1926, pp. 197-205.
14. Author's Note—It might be well to state here that the chapter on the score card in Hollis' book, *Motion Pictures for Instruction*, was not read by the writer until after the score card used in his study was prepared and had been submitted to several judges for criticism. A report of the work of Hollis at the University of Chicago appeared in Weber's book, *Visual Aids in Education*, in a rather full form, and was the original source of information of what had been done by Hollis.

Handicaps to Efficient Use of Pictures

As Hollis suggested in his book, in any article dealing with visual instruction, it is implied that good visual aids are used. In actual practice, the contrary is often true. However, undoubtedly aid can be given teachers in the selection of pictures just as it can be given for other types of visual aids. If not, careless selection of pictures may result in poor teaching when pictures are used. Whether poor pictures are used because no others are available, whether they are used because the teacher does not know how to select properly the best pictures, or whether the poor quality is due to carelessness, the results are similar. Even with excellent methods, efficiency suffers when poor tools are employed.

Also the question arises whether it is better to omit pictures that do not come up to standards which may be established, or use them, recognizing their limitations. If it is possible to get a set of standards for evaluating pictures for classroom use, would it be desirable? Here there seems to be no opposition. Teachers are eager for concrete suggestions which can be applied by them as needed. In what form would the standards be most useable? Would explanations be necessary to give a clear understanding of the standards, and if so, how extensive should they be? These are a few of the questions which arose when this investigation started. If they are answered, even in part, the result of the study will remove one of the hurdles which handicap teachers in the use of pictures.

Assumptions on Which This Study Is Based

In any problem, certain facts are usually taken for granted. This study is based on three assumptions, namely: (1) pictures are valuable aids to learning; (2) teachers need and do not have adequate standards for judging the value of pictures for instructional purposes, and (3) the combined judgments of a group of experts in the field of visual instruction constitute the best criteria for standards of evaluation that are at present available.

If the first assumption is incorrect basically, most of the modern educators are wrong. Teachers and textbook writers alike give pictures an important place in all visual-sensory aids. Because of the cost, many textbooks do not have as many pictures as some teachers find desirable, but modern texts have many more illustrations than those of a generation ago, and in most cases the quality of the illustration has improved. The weight of evidence supports the validity of the first assumption.

The best evidence of the truth of the second assumption is the reaction of teachers themselves. As has been previously mentioned, few authors have suggested definite standards for judging pictures, either in books on visual instruction or in subject-matter texts for teachers' training. In the first part of the experiment, teachers were asked to grade a group of pictures which was referred to a particular unit for the third grade, and no score card was provided. Again and again teachers would ask, "How are we to grade them?" "On what are we to base our judgment?" "What are we to look for?" Since the experiment was aimed at that point—to test for standards, if any—the only instruction possible was to use their own judgment. In the second part of the experiment when the score card was included with the pictures and returned to the teachers for a second evaluation, the concrete suggestions seemed to give assurance and confidence. Numbers of teachers remarked at the end of the test that the score cards helped them greatly and asked permission to keep the copy of the score card for their own assistance later.

In order to make statistical comparison, evaluations for each picture were necessary. These had to be unbiased and to be made by competent judges, hence the third assumption, i.e., that the combined judgment of a group of experts who are devoting their time to the problems of visual instruction constitutes the best criteria for standards for evaluating pictures for instructional purposes at present available.

The Resultant Score Card

From the results of the questionnaires returned by judges, the score card was constructed as an aid to teachers in judging pictures to be used in teaching situations. The score card as finally prepared is here given in complete form.

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J. CHARTS.

Due to limitations imposed by the physical set-up in many schools, and the expense involved, the writer suggests that teachers in such situations might well direct their efforts to the construction of some materials on their own initiative. To this end the teacher-pupil-made wall chart is recommended.

Making Wall Charts for Class Use

By
WILBUR EMMERT

Teachers need not hesitate to undertake this work because of their inability to draw accurately and letter neatly, for the technique suggested consists simply of tracing with pencil, colored crayon, or ink on the blackboard, cardboard or cloth, the enlarged image from a lantern slide projector, micro-projector, or opaque projector. The original may be the picture or material on a commercially made lantern slide, a teacher-made lantern slide, a micro-slide, a
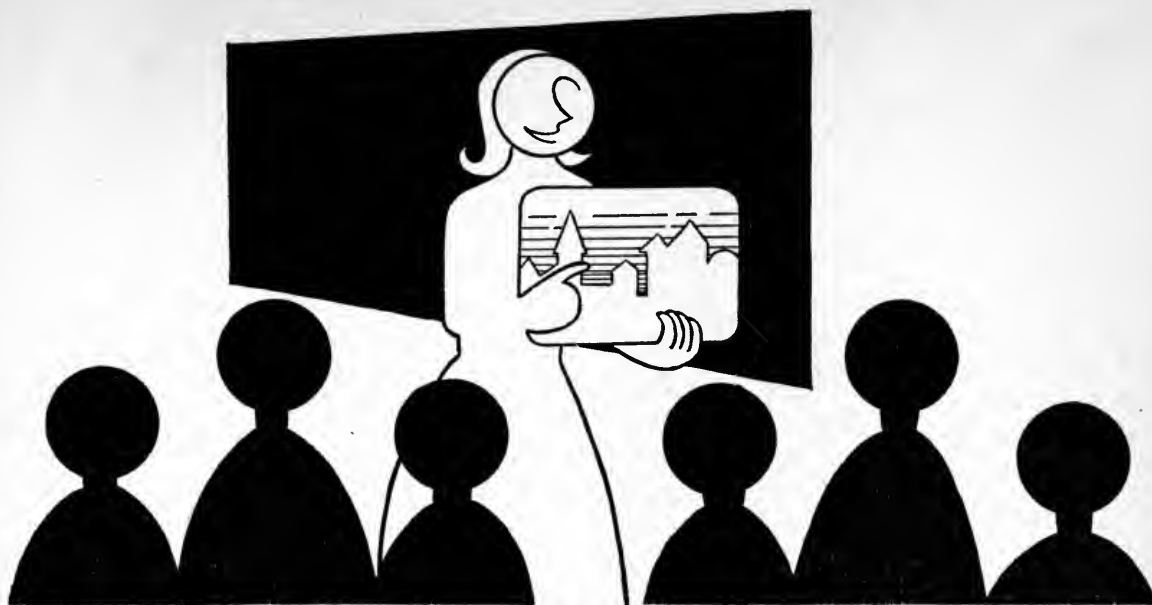
THE TROLINGER SCORE CARD
FOR CHECKING PICTURES FOR CLASSROOM USE

TECHNICAL QUALITY — 40 POINTS

Quality	Perfect Score	Explanation or Description of Term
A Picture Should be:		
Artistic	11	Is the picture attractive? Does it comply with fundamental principles of proportion, perspective, simplicity, balance, rhythm, and unity?
Clear and Definite	11	Are significant objects in sharp focus? Is the finish such that there will be no light reflections if it is used for a group?
Free from Blemishes	5	From a purely mechanical standpoint, is the picture free from flaws?
Of Practical Use	7	If the print is to be used in a group discussion, is it large enough to be seen by all? If for *individual* study, is it a convenient size for handling? Is it large enough to be studied without eyestrain?
Properly Colored	6	Is the color essential? If colored, is the coloring truthful and artistic?

INSTRUCTIONAL QUALITY — 60 POINTS

Quality	Perfect Score	Explanation or Description of Term
Truthful	15	Does the picture actually represent a true situation, or is it a copy of a fanciful drawing or painting? Does it convey a true impression? Is it typical or is it unusual? Is it natural — not posed?
Authentic	8	Are the facts or sources of the picture well enough vouched for to make possible the assumption that truthfulness is inherent?
Relevant	11	Is the picture pertinent to the subject under discussion? Is it appropriate to the age level of the children to whom it is to be shown? Is it within their level of appeal and understanding?
Significant	9	Does the picture portray a fact, events or objects of importance? Does it direct attention to significant facts or are they obscured by unimportant details?
Stimulative	11	Does the picture possess characteristics which may be utilized by a competent teacher to develop thought activity? Does it raise questions and problems? Does it picture procedure, life of a people, human contact, etc., rather than merely views?
Suggestive of Size	6	Does the picture include some known object by which an intelligent comparison of size is possible?

sketch or drawing on a piece of paper, the picture, diagram, graph, or other material printed in a book, magazine or newspaper.

The writer has made well over two hundred such charts. During the conduct of one course one semester, all the major diagrams, line drawings, and graphs found in the basic textbook were prepared in this enlarged form to facilitate the initial presentation, class discussion, and review work.

Their construction and use revealed that: (1) while any material such as cardboard, oilcloth, paper, beaverboard, etc., might be used, unbleached muslin made the most satisfactory material for this purpose; (2) since the muslin can be purchased in a number of different widths, the forty-two or forty-eight inch width had decided advantages for classroom use; (3) in general, wax crayon proved much easier to use and more legible than pencil or inks; (4) black, red, and blue were the colors having the best "carrying qualities" to persons who viewed the charts from a distance; (5) the cloth must be hung over a smooth surface for the tracing, and the blackboard proved the most satisfactory place for the work; (6) the work can be carried on in only a partially darkened room, depending upon the nature of the picture, the condition of the projector, and the nature and amount of light coming into the room; (7) if the completed chart is ironed with a medium warm iron, the crayon drawings will withstand repeated washings of the chart; (8) the lettering of the parts and the title for the subject matter of the chart may be made by tracings from the projected picture, or may be made with the aid of the various stamp lettering sets; (9) strong, bold outlines must be used, but shadings aid in giving quality to pictorial charts; (10) the picture can be made the desired size by placing the projector the proper distance from the screen, and adjusting for that distance; (11) small children, even in the third or fourth grade, can make satisfactory tracings; (12) it is not a difficult matter to reset the projector and "match up" the traced lines with the projected image even though the machine gets jarred out of position, or it becomes necessary to put the projector away and "finish the job" at another period; (13) it is a wise plan to switch off the light from time to time to make sure that everything desired has been traced; (14) sharp focusing of the image materially accelerates the tracing process; (15) charts of uniform width, say, either 42″ or 48″, are easier to hang in a predetermined, favorable place before the class than if a variety of widths are used; (16) pupil-made charts develop interest, understanding, and motor and artistic skills; (17) due to the fact that the muslin can be rolled or folded without injury, and thus more conveniently filed away, it is to be preferred to paper or cardboard for the material on which the copy is made; (18) since tracings are so easy to make, many teachers might well take advantage of this means of making needed classroom aids; (19) since legibility is extremely important in such teaching, "retouchings" can be made by the teacher or pupils as directed by one who views the chart from a distance.

The technique, then, of making a tracing, consists of selecting the original copy, securing the unbleached muslin of the desired width, placing it in proper position against the blackboard, setting up the projector, placing the copy in the projector, turning on the switch, bringing the projected image of the proper size in sharp focus on the muslin, standing to one side of the beam of light and making the tracing of the image on the muslin, examining the tracing by turning off the light from time to time to see that everything is being traced, putting on the proper labels and lettering the parts as desired.

There are a number of plans which might be used to display the charts before the group for study and class use. One method consists of simply unfolding the cloth and attaching the chart to the woodwork above the blackboard by means of thumb tacks. (In many classrooms a two inch strip of linoleum has been placed along the blackboard molding to protect the woodwork from thumbtack injury and for ease in inserting the tacks. Since many classrooms have along the blackboard molding metal tubing with movable, adjustable hooks to hold maps in position, grommets (eyelets) might be put along the top of the chart and these same map hooks used to support the chart. If the map hooks are not present, small screw hooks might well be placed along the molding at the proper distance to match the spacing of the grommets (perhaps three) of the chart.

In general, the writer has used the method of mounting the charts on window shade rollers, with the usual thin wooden strip as is employed with window shades and maps, at the bottom of the chart. Several sets of brackets have been installed so that a number of charts might be used during the conduct of the lesson, and to provide places for the charts to be displayed for individual pupil use during the study periods. While the mounted chart can be readily rolled up or down, and thus kept in much better condition than the unmounted ones, the cost of the shade roller and brackets adds materially to the cost of the device. If there is a limited amount of storage space, the mounted chart presents another problem. The unmounted charts consume more time in being put up for use and taken down after use; they generally do not hang as neatly as the mounted charts, since folding them causes wrinkles and there is no weight at the bottom to straighten them. But they do have the advantage of being less expensive; and using less storage space, since they can be folded.   ✪   ✪   ✪

The value of charts as visual aids is so well recognized it need not be reiterated here. Not so well known, however, is how to use white-cloth waterbase window shades for drawings, charts, and diagrams. Such inexpensive shades may be bought in almost any furniture or home-furnishings store for about one dollar each, depending on where you live and the quantity you purchase.

Window Shades Make Excellent Charts

By
DAVID P. BARNARD

Charts are of the greatest value when they are made to correlate with the course of study for use with a specific lesson or unit. For a single "frame" presentation, they have an advantage over other visual aids such as slides because no equipment is needed for projection. All you have to do is remove the shade chart from the filing case, kept conveniently at the front of the class room, and place it in position in standard window shade brackets previously located just above the blackboard. This requires considerably less time and effort than setting up a slide projector for one or two slides.

The shade type of chart permits ready storage and filing inasmuch as the shades may be rolled up, rubber bands slipped over each end, and a number and title lettered on the outside to enable identifying the chart without unrolling it.

PROJECTION TECHNIQUE

Construction of the charts is fairly simple. If the illustration you wish to draw on the chart can be projected by using an opaque or slide projector, hang the shade on the brackets, focus the material on the shade in the correct location, and lightly trace the outlines on the cloth. Remove the shade from the brackets and lay it out flat on a table. Ink the lines and letters with black or colored India ink, using a straightedge for straight lines and a compass for circles and arcs. If you are artistic, you may wish to use a brush. Colored crayons may be used or showcard paint. India ink, however, will make the most permanent chart.

If there is to be a sequence of illustrations, the first one should be at the bottom so that the shade may be pulled down just far enough for that illustration to be seen by the class. After the first illustration or chart or diagram has been discussed, the shade may be pulled down to expose the next diagram. Generally three diagrams will be all you will have space for. In arranging a sequence this way, you keep the class from "looking ahead" while you are explaining the first diagram.

Charts made on railroad or poster board have always presented a storage problem; they have to be filed flat, one on top of the other, because they bend or warp when stacked on end. Window-shade charts can be readily filed by using a "pigeon hole" type of filing case, arranged so that the shades are standing on end or lying horizontally. Each "pigeon hole" space may be numbered or lettered to correspond with the number or letter on the shade. An index listing the numbers and titles may be pasted onto the cover of the filing case or located close to the case. We have found this system very helpful in our graphic arts department where we have some sixty window-shade charts on file.

SEVEN RULES

The following general rules have been found helpful in producing charts — window shade or any other kind:

1. Strive for simplicity.
2. Arrange illustrations in an arresting and pleasing manner.
3. Use color for definition or more complex charts.
4. Design material to be as illustrative as possible in order to avoid detailed printed explanations.
5. Use numbers and a legend whenever detailed labeling is required.
6. Plan chart size to accommodate the maximum viewing distance. This would generally be about thirty feet. Letters should be at least one-inch high to be legible at this distance.
7. Check the content for technical accuracy.

And last but not least, after you have made your windowshade chart, use it correctly! The following points may prove to be helpful in using charts in the classroom:

1. Use a pointer.
2. Speak toward the class.
3. Provide time during your explanation for the students to take notes.
4. Stand to the side of the chart.
5. Show one diagram or illustration on the chart, or one chart at a time.
6. Time the use of the chart with the discussion.

When you go to buy your shades remember to ask for *water-base white-cloth shades.* Oil base shades will not work well because they will not take ink and crayon readily. You can buy shades in varying widths and lengths — but thirty-six inches is probably the most satisfactory width for most chart purposes. Decide on a standard width, however, as they will all fit your filing case and wall brackets.

Yes, you'll discover that *window shades make excellent charts!* ❋ ❋ ❋

K. ILLUSTRATIONS IN BOOKS

The first step in improving illustrative materials in textbooks is to improve the textbooks themselves. This means not only an improvement in the visual appearance and presentation of the book—cover, typography, format, page layout, margination, etc.—but also an improvement in the structural organization of the writing—the internal logic of the book. This is a matter of the author's thinking and conditions to a great extent the character, quality and handling of illustrations, page arrangements, typog r a p h y and format in the design of the book.

Improving Illustrative Material in Textbooks

By S. B. ZISMAN

It is also a matter of the theory of learning. Ernst Reichl, the book designer, once pointed to the Talmud as a prototype for the textbook: "Students of the Talmud are instructed to remember not only the meaning of a passage but also the page and line on which it occurs. All Talmuds are printed alike." That is, each line was found in the same place and on the same page, no matter what the edition. The theory was that the "optical memory recalls the black and white impression of the printed matter on the screen of the mind and reads it off as from the book itself." The purpose of this organization was to aid learning through memory—learning was by rote.

Our own early textbooks followed the same principle of learning. I recall a teacher in French in high school who dazzled us by his knowledge of the Chardenal we used as text. He would rarely, if ever, look at his book but made all his references from memory: "Such-and-such a rule," he would announce, "you will find on page so-and-so." We thought he was quite wonderful, but I doubt that we were learning French by this method.

The text today is much less this biblical use of chapter and verse. Our world is too complex and the need for democratic learning too strong for such authoritarian method. Our textbooks need to be rich sources for stimulating information, intelligent guides for personal activities, coherent interpretation for our individual and collective experiences.

Its Materials

A modern textbook having these characteristics will be built out of photographic and graphic materials as well as verbal language. The problem is not to use illustrations as afterthoughts, as advertising embellishments, as prettifying devices that serve only to make a book more saleable. We have too much of that kind of illustration, where a frontispiece and a few scattered photos or drawings are included to "doll up" a dull text or relieve the weight of continuous reading matter. While we may be grateful for them on occasion, these are not visual aids of the kind that are needed. The malpractice has carried so far that publishers are beginning to boast of "38 visual aids" as a selling point when they mean perhaps 38 arbitrarily chosen photographs.

Function of the Illustration

My experience in architecture has taught me that a clear understanding of function is the first requisite to getting good results in design. When the basic function is understood it is next important to have a clear understanding of how materials are to be used functionally. It would therefore be well to note what illustrations are and how and for what they are to be used.

Illustrations should be clearly understood as a visual form of communication, neither superior nor inferior to verbal communication, but as organically related to the story or the information presented as a sentence should be to a paragraph or a chapter to the entire book.

To use illustrations functionally the following two principles should guide the selection and placing of illustrations:

1. *Illustrations should be functional in subject content,* illuminating or emphasizing the text or serving as an organic part of the text. It would be of benefit to look at some of the old illustrated primers and spelling books and especially the *Orbis Pictus* of Comenius, to see some good, even if naive, examples of this principle in application.
2. *Illustrations should be functional in visual arrangement,* providing continuity and unity in reading. A happy marriage of text and illustration requires not only compatibility but healthy visual contact.

Types of Illustrations

Before reviewing some of the possibilities in improving illustrative materials we might clarify the basic uses of the illustration. We have referred to illustrations as being a visual form of communication. The form should be used, however, whenever visual imagery can advantageously serve in those circumstances where verbal language cannot be wholly effective. Illustrations should be the means of making more concrete whatever may be difficult or elusive in comprehension because of abstraction or vagueness.

The intrinsic quality of illustrative material depends a great deal on the illustrator and his own qualities. We may specify four traits: The first of

these is *care,* which means a meticulous concern for details, for getting the kind of material and the appropriate technique. It means a relentless pursuit for a significant idea. The second trait is *imagination,* which means a flexibility and playfulness in thinking, an ablity to visualize. The third trait is a *sense of humor,* which means a quick, sympathetic response to the foibles of man, an eye to the ridiculousness or incongruity of a situation, a wit that reveals things unexpected. The last trait, and hardly separate from the others, is *love,* that is, a deep emotional feeling for the job and a desire for the perfect result. When illustration has to be judged critically it might be well to consider how much care, imagination, humor and love has gone into the work.

The quality of illustration may be judged by the extent to which it follows functionally the basic uses which are to help visualize people, environment, quantities and processes. The general types may then be indicated as follows:

1. *Illustrations of human interest*
   Illustrations may be used to relate subject material to people, to portray and to make real to the student the characteristics of human beings in the situations of the text—their appearance, dress, actions, poses, attitudes, surroundings, etc., A vast amount of our learning revolves about human beings in their personal and social circumstances and relationships: The illustration can serve to visualize the human aspects of the text. The photo-document is perhaps our best means for this type of illustration.

2. *Illustrations of environment*
   Illustrations may be used to relate subject material to place, to locate people and activities, to give dimensions and spatial relationships. Place and space are important facts of evidence in almost any study (and perhaps too often neglected). Maps, plans and charts are the typical means for this kind of illustration.

3. *Illustrations of quantity*
   Illustrations may be used to help grasp and understand figures and statistics: Modern learning is statistically-minded. The illustrative technique is primarily one of *arrangement* of quantity facts. The means are chiefly charts, graphs and tables.

4. *Illustrations of processes*
   Illustrations may be used to simplify complex processes and organization. A great many of our problems — machines of production, governmental organizations, industrial processes, to name but a few subjects — are so complicated that we need to visualize them in blue prints, charts and diagrams, or illustrate them step by step to make them clear and easier to study.

POSSIBILITIES FOR IMPROVEMENT

A special word is needed concerning photographs. *Photographs are essentially documentary in nature.* They are especially powerful as social documents: They have the force of reality, of actuality. Their use is not for esthetic decoration. They should be selected and used with as much care as verbal evidence.

The possibilities for improving illustrations and their use are infinite. Improvement will depend on three factors: The person writing the text, the publisher producing the text, and the designer illustrating the text. The most desirable situation is when these three factors are in close and harmonious co-ordination. The most ideal arrangement would be to build a text with the active cooperation of all three from the very beginning of the idea of the text through to the finished product: author working with illustrator and publisher while the manuscript is being prepared, illustrator working with author and publisher while the book is being designed, publisher working with author and illustrator while the book is being produced. The new textbook must be a collaborative effort, with a nice balance at play among the three important factors. Such a situation is not impossible of attainment. A book is now being done with active collaboration of author, publisher and illustrator.

I am indebted to Robert Disraeli, the photographer, for an idea in book illustration that needs to be adopted. When photographs are used in a text the present practice is to try to collect from a number of sources whatever photos may be available. Sometimes it is possible to get good illustrations, but more often the right photo for a particular illustrative situation is not available. It would be almost too much to expect it to be. Disraeli suggests that a photographer could be engaged much as a graphic artist is engaged on the basis of an entire book. Where the right photo is not available the photographer would make it for the direct purposes of that particular text. I look forward to an experiment of this kind; I am sure the results will be worth the effort.

It is rather unsatisfactory to speak of other possibilities in improving illustrations without having specific problems to work out before you and with you. But I can mention a few ideas that may help in cases where the nature of the text might warrant use of the ideas.

One present practice in book making is to group a number of photographs together at certain intervals throughout a book. This is done partly for economy in binding since the sheets of photographs can be wrapped around signatures of the text, instead of "tipping-in" individual pages of photographs. This method can be extended and better organized to provide a kind of visual review or preview for the

verbal text. Better still, the photographs can be more functionally organized in the form of chapters to provide continuity of text. Ruch's book on "Psychology and Life" is an interesting demonstration of this idea.

Another possibility is the use of illustrations as running comment for a text. The illustrations would fall consistently on a reserved portion of the page in the same way marginal notes and footnotes are used. Careful selection or making of illustrations in the control of scale and proportion may permit a continuity of illustration, the effect being like that of a motion picture film.

Still another possibility, which I believe will find increasing adoption, is the use of visual material as "text" and verbal material as "illustration." This is done in "Land of the Free" where MacLeish uses his poetry to intensify the effect of the photographs. This possibility will be in the nature of what I have termed "visual textbooks," already superbly exemplified by the *Building America* series.

Finally there is the possibility of color. We have lived too long in a black and white world. The reality is that color exists everywhere and in all things; we need color reality in our illustrations. The use of color photography will be the next major advance in illustrating textbooks. I have just learned that some fourth grade readers containing color photography will soon be published. The improvement in technique and quality in color photography indicates that we shall be able to expect more and more photos in illustrative work.

Whatever ideas in illustrations may be followed, the basic problem is more unified effort. What is needed most is a finer and more honest integration of the talents and capabilities of author, publisher, and illustrator.

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For many years educators have been interested in audio-visual aids to instruction. The educational motion picture has received particular attention. So have the potentialities of radio and television. Teachers have increased the use of other instructional materials familiar to them — such as filmstrips, slides, models, flat pictures, and recordings.

Textbook Illustrations: A Visual Aid

By A. HOWARD, Jr.

Enthusiasm for audio-visual instructional materials was heightened during the recent war. Now, the postwar flurry is passing. Educators are still enthusiastic about audio-visual aids, but their enthusiasm is taking a more constructive turn. At various colleges and universities, students of research are investigating audio-visual problems. Producers of equipment and materials are expanding their operations. Contributions to the trade magazines and other periodicals include studies made by teachers in their actual teacher-learner situation. There seems to be an enlarging concept of the field and a movement to apply increased scientific analysis to its problems.

This trend is a good one. But there is a tendency to obscure some aspects of the area in the light of the more glamorous motion picture, the radio programs, and television phases. The scope of audio-visual aids includes a wide range of materials and techniques, each of which has an important contribution to the teaching process.

In a desire to make a useful study of one of the less prominent aids in the field, the writer has studied the use of flat pictures and textbook illustrations as visual aids and surveyed the literature in these areas.

THE NATURE AND PURPOSE OF TEXTBOOK ILLUSTRATIONS

According to an article by Good,[1] the first illustrated schoolbooks appeared about 1460 shortly after printing came into general use. Many kinds of books were printed at that time, including geography, travel, and nature books. These needed explanatory pictures to make the text clear and vivid. Pictures had a functional purpose.

Early illustrations were copied from old manuscripts. These pictures were transferred to woodcuts which could be used in the simple printing process of that era. But down through the tradition of hand-copying these manuscripts, the pictures had become less representative of the original meaning. So, by the year 1500, artists began drawing directly from nature for the woodcuts used.

Early popular books included many illustrations, and many kinds of illustrations. *Der Edelstein*, 1461, was a collection of fables with 101 woodcuts. A few years later *Aesop* appeared with 200 pictures. In 1478 Ptolemy's *Cosmographia* had maps. The same year Braydenbach's *Pilgrimage,* a famous travel book, included many pictures to illustrate foreign lands. In 1488 John Widman printed the *Algorithmus Linealis,* showing illustrations of commercial customs and exchange, geometric diagrams, various tables, and examples of arithmetic operations. Three years later, *Pictagoris Arithmetrice Introductor* was published in Florence, Italy, which included thirty-nine illustrated problems. About the same time *Summa* was printed as the first work to illustrate finger symbolism of numbers, with thirty-six positions of the fingers and hands shown. The first printed *Euclid* had 420 diagrams in the margins. Music books of the time in-

1. Good, H. G. "The First Illustrated Schoolbooks." *Journal of Educational Research,* January, 1942, p. 338.

cluded both music scores and pictures. Even Latin grammars were illustrated, and in 1545 Henry VIII authorized the *Primer* with religious pictures. Hence, Comenius' *Orbis Pictus,* which appeared later, was not the first illustrated school book, as is sometimes supposed.[2]

With these early beginnings, illustrations have apparently always been an integral part of most schoolbooks. Today, an examination of textbooks reveals a profusion of pictures and other illustrations. Charts, graphs, diagrams, tables, line drawings, photographs, decorative paintings, and sketches abound.

And illustrative techniques have been vastly improved. Even the texts of only three decades ago appear dull in comparison with those of today. Changes in format, typography, and illustration have made the textbook more attractive and interesting. Woodcuts are still used, but modern lithography and photography provide a medium which would amaze the old artists. Color processes in photography and printing make it possible to reproduce exact and life-like pictures which vividly portray their purpose. The artistic possibilities are well exploited.

The original idea of illustrations in schoolbooks seems to have been that pictures had the functional purpose of clarifying and supplementing the text. That the pictures were also works of art was incidental to the main purpose. However, in the evolution of books and printing techniques, emphasis on the artistic aspect of illustrations has increased.

CRITERIA USED

Eventually, both art and function became the criteria for choosing illustrations for textbooks. With the advent of color processes and other improvements, art took the fore and pictures became less related to the text material. Observations by teachers that children were paying little or no attention to the illustrations during study periods led to a growing conviction that they were of no value in texts. In 1939 two representative publishers admitted that they had no criteria for selecting illustrations other than the intuitive judgment of the authors or editors.[3] But more recently there has developed a trend in the other direction. In 1945 Lloyd W. King stated: "It is interesting to note the discrimination with which modern textbook makers select pictures. They are definitely a part of the text itself and are used as teaching devices. There possibly will be wider and an even more discriminating use of photographs and other illustrative material."[4]

It is reasonable to assume that both art and aid to clarification are important criteria for textbook illustration. Learning ought to be pleasant to be effective, and concrete wherever possible. Text illus-

trations can serve to do both. The two major attributes of any textbook are its content and its appearance. The successful textbook must have high quality content and an attractive format. Today, books are to be studied and appreciated.[5]

WHY ILLUSTRATE TEXTBOOKS?

Two purposes of textbook illustration should be to give (1) visual satisfaction, and (2) visual aid to understanding. Zisman has remarked that illustrations should be functional in content and functional in visual arrangement. "Illustrations should be the means of making more concrete whatever may be difficult or elusive in comprehension because of abstraction or vagueness."[6]

Orth points out that texts have led to an emphasis on memory; that in order to get more observation and comparison, books need illustrations.[7] Modley states that most people are literate, but that the ability to read and the ability to understand are two different things. Pictures help the reader to understand books.[8] Grossnickle suggests that the function of the pictures in textbooks is principally to enable the pupil to form concepts and acquire information through visual aids rather than the printed page.[9]

Nearly all of the research studies in the area state a conclusion to the effect that if pictures are to aid the understanding of materials, the attention of children must be directed to important items in the picture and to the interpretation of these items. Studies by Cropper,[10] Halbert[11], and Kambly[12] give evidence to show that pictures did aid comprehension. They also point out that with instruction children relate pictures to reading materials, but without it they see the picture in terms of facts only.   ⊙ ⊙ ⊙

2. *Ibid.,* p. 343.
3. Kambly, Paul E. "Science Textbook Illustrations." *Science Education,* Feb., 1943, p. 17.
4. King, Lloyd W. "Changes to be Expected in Materials, Organization, and Format of Textbooks." *14th Annual Conference for Administrative Officers of Private and Public Schools,* University of Chicago Press, 1945, p. 9.
5. Tuttle, Edward M. "Making Attractive Schoolbooks." *School Executive,* April, 1936, p. 298.
6. Zisman, S. B. "Improving Illustrative Material in Textbooks." *Educational Screen,* September, 1938, p. 219.
7. Orth, Fred W. "Vitalizing the Textbook." *Progressive Education,* October, 1936, p. 444.
8. Modley, Rudolf. "Picture Books for Grownups." *Journal of Adult Education,* April, 1939, p. 152.
9. Grossnickle, F. E. "Illustrations in Arithmetic Textbooks." *Elementary School Journal,* October, 1946, p. 50.
10. Gropper, Floyd A. "An Experimental Evaluation of the Ability of Children to Interpret Pictures Used in Elementary Textbooks in Geography." *Educational Screen,* June, 1945.
11. Halbert, Marie G. "The Teaching Value of Illustrated Books." *American School Board Journal,* May, 1944, p. 43..
12. Kambly, Paul E., *op. cit.*

L. MAPS AND GLOBES

When an anxious father whose boy has finished sixth grade but cannot use a road map well, and who asks whether Illinois is higher above sea level than the eastern Colorado plains, wants to know why maps and globes are not a part of the world of experience of this young man who has already been exposed to formal geography for three years — when the morning's mail brings a letter from a man who is in close contact with schools over a wide area, and who wants to know why maps and globes are not more widely and more intelligently used—then it is time to take stock of the present extent of map and globe use. It is time to reevaluate the wall maps and the globe as educational instruments and it is time to develop a consciousness of these "sustained use" visual teaching aids as an integral part of the *work* materials in the classroom.

The How of Map and Globe Use

By W. S. MILLER

Audio-Visual Guide. Vol. 15, No. 2. Oct., 1948. Pp. 26-29.

All right — why are maps and globes not used more? They are deserving of use, because they are the *only* means of illustrating our world, or substantial parts of it. The total structure of geography consciousness must be built upon our abilities to create indelible mental images, mental maps or globes, in the minds of our students. We must recognize that when we speak of very small areas such as a single building, perhaps a city block, a mountain peak, a river, it is possible for us to have a photographic image of this very small section of geography. When we think of a larger area the cartographic image that we must produce is different. Our world in imagery is a microcosm, our smaller areas micro-areas.

We believe that there are several reasons why maps and globes are not used more. The first of these is a wide failure to more fully recognize the special kind of image that is required as the basis for our geographic thinking. Today perhaps a more prominent reason, yet a much less excusable one, may be the search for some other device that will be more dramatic, more capable of self-teaching, easier to understand.

MEANINGFUL USE OF MAPS AND GLOBES

From this it very naturally follows that the first step in meaningful map and globe use is to recognize that there is no other medium that can come as close to representing the world as does a world globe, or that will stand for areas as completely as the map stands for an area. *Acceptance* of maps and globes as the nearest approach to the reality of geography is, therefore, a prerequisite to proper map and globe use.

A second step in proper map and globe use, in our judgment, is early association. If a teacher is working with a first to third-grade class, perhaps reading stories about travel or events in different parts of the world, some form of globe may well be placed before the children to further arouse their curiosity, to stimulate their interest, and above all to provide the proper means of answering questions that may develop. No formal geography teaching need be attempted. The globe is there to suggest that *place* on earth is involved and that this globe represents the earth. Incidentally, display of the globe will teach that the earth or world must be a sphere or it would not be so represented.

Farther along, when we are talking about global concepts, world relationships, around the world flights, the globe again is the best and natural means of illustrating our discussion. New concepts will be developed at this point. Some courses of study approach geography through type regions where the globe can be used effectively. Other courses begin with global, regional or natural geography, and here a relationship between the world globe, world map and maps of smaller areas becomes important in inculcating perspectives. California, or New York, may look rather insignificant on a world map or globe, but the same states take on a greater importance in a map of the United States, or still greater importance in a wall map of that state by itself.

LEARNING TO READ MAPS

Now we are face to face with the crux of map and globe use—learning to read these specialized teaching tools. The reason why the sixth grade youngster asked a disturbing question about the relative elevation of Colorado and Illinois was because he had never learned to read the physical-political United States map. Yes, he can read all of the words on the map, but he has not been trained in reading map colors. Colors in most maps are symbols. It has often been said that we learn to read and then read to learn. We may feel that we have completed the first step in this cycle fairly early in life, but the second part, reading to learn, continues throughout our reading life, or should. However, in the case of map reading, many have not learned to read at all or as fully as might be desired. Map understanding, learning to read the map, does involve the development of a specialized skill, because a wide variety of interesting subject matter has been classified and presented symbolically in the map and globe and meaningful reading requires a familiarity with the terms, colors and other symbols which are peculiar to maps and globes, as well as an ability to make the necessary mental associations. It is one thing to perceive symbols, but to discern is quite another thing.

As it is necessary in learning to read to develop an association of letters or letter groups to objects, so is it necessary in our learning process in the specialized art of map reading to begin with the explanation which the map makers have provided, which is called "the legend." If we find a series of color blocks ranging from dark green to dark brown with indications of varying altitudes along the sides of these gradations of color, then the publishers have given us a map which tells a story of land elevation. Our sixth-grade youngster may have seen such maps, may have had the legend explained to him, but the map reading skill had not been developed to the point where a real image was created. As Renner puts it, "When the map is properly mastered and used, the State of Iowa becomes a *Map of Iowa*, and the Nation becomes a *Map* of the United States in the learner's mind."

The legend usually is not limited to showing only one geography factor such as elevation, because a map contains a great deal of classified information. Through careful study of the legend and comparison of the legend with the map itself, we will see that this same map probably will contain many other interesting facts of comparative city population, of political boundaries, of railroad and waterway communication, and any number of subjects that have been so cleverly shown in the map that this wealth of information is presented without any sacrifice in the clarity of the total subject. As we study the legend or symbol scheme of a map or globe, we are in the process of learning to read the map.

Language of Maps and Globes

A second step in map and globe familiarity is a knowledge of some of the world signposts that have been used in this cartographic image of the area portrayed. Some might call it the language of maps and globes, or others might say it is a means of orientation. Certainly to understand the map or globe with which we are working, we will very quickly need to know the meaning of such familiar-to-be terms as North and South Poles, Equator, Scale of Miles. Not long after we will wish to become familiar with Tropic of Cancer and Capricorn, Meridian of Greenwich, sea level, altitude and other basic terms of map and globe use. For real orientation we cannot go very far until we have learned the significance of meridians and parallels.

Before we go too far in the general subject of map and globe use, some attention should be called to the wide variety of maps and globes that are available. Maps and globes are specialized teaching tools, and this specialization reaches the extent that there are physical-political maps, now very widely used, political maps, population density maps, maps of rainfall, temperature, vegetation, products and many other factors, as well as outline maps and globes on which class projects may be developed. The geography conscious teacher, let us say in the fourth grade, embarking on the formal teaching of the subject, may accomplish a large part of her development of geography concepts through globes and maps of simple coloring, on which the class develops these concepts through marking in continents and oceans, meridians and parallels with chalk, in this way securing the stimulus which participation can provide. Learning true relationships will take place by introducing the terrestrial globe, physical-political or political map to the class as well as the less formal project-problem or "write-on-me" type of globe.

Again, how should maps and globes be used? Necessarily this discussion cannot offer a method for each map or globe that may be used in a modern classroom, but it can suggest some general ways in which maps and globes can be used effectively, and perhaps offer some suggestions that will help in avoiding ineffective uses or non-use of these important teaching aids. Certainly map and globe use should offer every possibility of bringing experience to the map, of participating in the adventure of map and globe understanding, and in making application of such experience and participation in a broader learning.

When map use is limited to the mere pointing out of places, especially by the teacher, most of the possible benefits through such a visual teaching aid are lost. If you begin map use by putting a map before a child, who is perhaps telling the class some interesting geographic experience or observation, and require that the child use the map to point out places, you will observe that the use is forced. If you watch a group of children examining maps in free and open discussion, you will hear a great deal of information extracted from the map or globe, and much of it classified. The teacher who denies her class an opportunity to gather around maps and globes, and learn from them cooperatively, is missing one of the most satisfying moments in teaching. The teacher can make the search for knowledge more exciting and interesting by questions that will bring out the desired facts.

What are other ways in which children may participate in map use? The scale of miles offers an interesting possibility. It would be a very simple matter for a teacher to inform the class what scale is used on a map or globe, but in measuring the distance between cities in an area, checking the length and breadth of an area from the map or globe, and in other ways developing this concept to the point of meaningfulness, we have one illustration of the possibilities of participation.

Today's classes offer better possibilities for teaching by experience than was true a generation ago. At the age where the greatest emphasis is usually placed in geography teaching in our schools, practically every classroom has at least some members who have had some first-hand experiences that can be related to map and globe use. They may have visited a number of large cities, and the concept of city size as interpreted in the symbols used in maps and globes can take on new meaning by the relation of their impressions of Chicago, Milwaukee, or other areas which they have visited. If they have been fortunate enough to have travelled to a mountainous area, assuming that they have been living on plains, the relationship of such areas to the coloring of the physically colored map will have new meaning, and can be made to have greater meaning for other members of the class.

The learning through application must necessarily take place particularly when those areas are studied where few children have at any time any direct experiences with the areas portrayed. They can, however, make some applications of their own experiences to other areas. For instance, size of cities in other parts of the world can be related to cities within the field of experience of the child. Distance between cities in other parts of the world can be related to distances where the class has produced an example of actual experience. Elevation above sea level, roughness of land, productivity, climate and other factors can be brought to the map for comparative purposes to make it more meaningful. The alert teacher will have little difficulty in helping the learner to see a relationship between the learning experience and the life experince as it relates to maps. Stories of travel, whether it be modern travel or the voyages of early travellers, can develop the understanding that maps are always used by someone in going from one place to another, by pilots and ship commanders and motorists. In this way a consciousness can be developed that maps are important and that the many maps and globes that tell the story of the development of an area, its activities, its conditions of location, and other factors would not be offered unless they were important.

Relation of Maps and Text

We cannot too strongly emphasize the relationship between the subject matter that is shown on the map, and the written or verbal material that is developed in the textbook and in class discussion. Geographic knowledge in the final analysis will consist of the association of facts with places, which can only take place on an organized and classified base which must be globe-like or map-like. The material that is *brought to the map* is of great importance.

How do you relate your text material, your special reports and investigation to the map? Final result of your study is to make *all* the data on an area into your mental map of that area. How many of the questions arising in the work can be answered from maps? By constantly developing new ways of relating more and more of what you teach or what the group discussed to maps, you will increase the map and globe experience.

Maps and globes, which should be in the classroom as regularly as the teacher is there, under proper use can be a partner to the personality of the teacher, because a consciousness of them can be developed to the point where they are representative of the geographic areas that they portray. As the cross stands in the average mind for the symbol of Christianity, the flag for the ideals of a nation, so should the map or globe, through repeated use, through the material it silently presents and the experiences and contributions that the class and the teacher bring to it, come to stand for the land which we are studying. The maps should add to the stature of the teacher and the class through bringing responsible scholarship to the group, the research of specialists that the average class could not employ, plus the benefits of colorful presentation, constant availability and an ability to serve as a focal point for class attention. Every effort should be made to develop the consciousness that the map or globe which is on display before a group stands for the area it depicts and it should be recognized that the purpose of the display is to bring a symbolic image before the group—the nearest thing to reality that can be provided.

Five Values

The proper use of an adequate supply of maps and globes in the classroom should provide the following benefits to the members of the class—

1. The continuous use of this type of visual teaching aid should provide a clear mental image of the area, reality to facts which may be acquired through reading and through verbal learning which in turn should mean added interest in the study, and added understanding.

2. By using the full participation experience and application possibilities of the map or globe, the outlook of the pupil should be broadened so that his learning can be more meaningful.

3. The sustained use of visual teaching aids presents facts in logical and orderly fashion. Good maps are an excellent example of proper organization and use of facts. These characteristics should assist in forming helpful, learning attitudes.

4. Maps require the development of map reading skills, and suggest the acquiring of further specialized skills.

It is difficult enough to visualize areas with which we are familiar. When they are discussed verbally they seem very remote. When they are reduced to visual form through the medium of a map or globe they take on concreteness and for this reason may serve to give us a greater appreciation of the geographic factors of areas with which we are not personally familiar.

5. In the hands of the alert teacher the map is not a static thing but a stage on which the story of life or peoples unfolds. Each map provides its own stage and the contents selected by the editors and publishers provides much of the stage properties these actors are using. This relationship to the life of peoples should not be overlooked.

In the approach to map and globe use, it must be remembered that the goal is to cause such equipment to divulge its information. It is like a teacher —mere presence may have some benefit, but the real results occur when the teacher leads in class discussions, pouring forth the results of previous classification of subject matter, reading skills, and experiences.

Strong Image Important

Man found it necessary to use maps because words alone were failing to provide the images required for clear understanding. The key to the successful use of maps and globes is through the development of a mental image of such strength that it remains fixed in the minds of the students—something which provides a logical, meaningful background for the written word of the lesson, for the projected visual teaching aids that may also be used. There must be something concrete on which the whole structure rests, not something that is transitory in appearance, but something that is present before the class all of the time. One cannot have really good mental image maps without having made frequent use of *actual* maps. The mental map is the framework on which much valuable subsequent knowledge can be organized or oriented. That part of the lesson which relates to geography—and we must remember that everything which is or happens involves a real place and has a relationship to other real places—finds its best, its *natural* expression in the map or globe. These indispensable, though silent, visual teaching aids ask only that the teacher bring to them the same imaginative qualities, the same drama, the same willingness to use them for class experience and activities, the same dignity, that the rest of the group learning processes provide. When full abilities in learning to read maps and globes have been acquired, and an appetite created to read more and more, reading to learn will indeed become a highly profitable experience. Let's see what the map tells us.　❂ ❂ ❂

Air World Geography

By
N. L. ENGELHARDT, Jr.
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The world is a globular mass of land, water and air held together by the forces of gravity. The earth, which is the nucleus of the world, is encased in an ocean-of-air of unknown depth. By the invention of the airplane this vast ocean has become a world common, offering to the vehicles of the air, speed and freedom of movement which were impossible to achieve through any other medium of transportation and communication. Unlike the oceans of water, the air ocean reaches the threshold of every home on earth. It is a universal highway free from the obstructions of earthly barriers—a highway without mountains, deserts, tunnels, bridges or bottlenecks of traffic. These facts are of such tremendous importance to civilization that the era which we are now entering has been acclaimed the Air Age.

Our planning for the Air Age needs to be based on global geography. Our attitudes toward world relations, peace, freedom of the air, air power and many other vital problems will be founded on our understanding of geography. Let us make sure that the geography we know is Air-Age geography.

Geography is merely the expression of the ideas which men have about the world in which they live. There is little geography which is not subject to change from time to time as new ideas develop. Under the impact of air transportation, ideas of the world are changing rapidly. Therefore, the geography which we need to learn for living in the Air Age is quite different from the geography which was taught in school before the advent of the airplane. Our conceptions of the world need to be in harmony with the global outlook of those who fly the international airways.

How Flight Has Influenced Geography

The direct routing of airplanes requires that we understand great-circle courses rather than the more circuitous routes followed by sea-going vessels. Alaska, located on the great-circle route from the United States to the Orient, has become a new international gateway. Greenland is en route to Moscow and the Middle East. Kiska, rather than Pearl Harbor, is a vital point on certain trans-Pacific airways. Pilots, returning from world flights, talk of Gold Coast, Eritrea or the Himalayas much as yesterday's tourists might discuss London, Paris or Shanghai. These places have recently come into prominence because of the establishment of international airways, while the better-known large cities owe their existence to the development of sea commerce.

The high speed of flight is changing our ideas of the relative importance of distances in geography. The Atlantic Ocean has become a winding river, easily bridged in overnight flight. This transoceanic crossing has been made thousands upon thousands of times during the past year. The Pacific Ocean, spreading half way around the earth, can be traversed in little more than a day. In the air world, the fundamental measure of distance is hours of flying time rather than miles of surface travel.

The demands for light-weight materials, growing out of needs of aircraft and air-shipped commodities are creating a new geography of natural resources. The locations of places where bauxite is found are becoming as important as those where iron ore is mined. Magnesium, beryllium and plastics are assuming great significance in this new era.

The universality of airplane travel has made the study of continental interiors equally important to the understanding of sea-coast geography. The airplane has created many new and exciting possibilities for the expansion of the habitable areas of the globe. Remote spots on the earth, heretofore reached only by llama, mule or dog teams, are now at our doorsteps. We need to learn what these places are like, who the people are, their philosophy of life, government, family, customs and language.

But these new ideas of geography are only preludes to new concepts of the relationships among the people of the world. In the air world, Indians, Chinese and Russians are American neighbors. Traveling over the new airways we may meet people of all races, colors and nationalities. In the course of a few days air travelers can visit with the dark-skinned natives of the Congo and the bronze-colored people of the Fiji Islands. The Eskimos of the arctic region and the Indians of the Bolivian plains are equally accessible.

Until the advent of the airplane, Americans had never really known the people of the Far East, the Middle East, Russia, the Polar region or Africa. Their customs, standards of living and languages were foreign to those who were brought up on Latin, French, German or Spanish. Americans had been a part of western civilization. The eastern world of India, China, Siberia and Oceania were far away, almost mystical places, visited only by tradesmen and missionaries. Europe was America's closest neighbor.

The reasons for this limited relationship are attributable largely to the peculiarities of sea transportation. Our forefathers migrated across the Atlantic from Europe. Communication across the Atlantic to the "old country" became relatively rapid and inexpensive. Four days to Europe and two weeks to the Orient had been the fundamental equation by which understanding among people was determined.

WORLD MAPS

These relationships became so fixed in the minds of Americans that they served as foundation for our ideas of geography. To illustrate these ideas we used certain kinds of world maps. But maps are only man-made pictures of the world. The ideas which we have about our world determine the kind of picture which we will draw.

THE MERCATOR MAP

Shortly after Columbus landed in the West Indies, a man by the name of Mercator drew a map which has been known by his name ever since. This map was originally drawn to meet the needs of navigators of sailing vessels on their trips around the world. But for over four centuries this map has served as a foundation for understanding world geography and the relationships among peoples. The Mercator map is not a true picture of the world. It is primarily a mathematical device used to simplify the problems of sea navigation. The Mercator projection is still used, along with the Lambert and gnomonic projections, for air navigation. However, this fact should not influence us in the selection of maps which are to be used as the basis for study of social, economic and political problems. We need not confuse the problems of navigation and geography, for certain instruments are needed in one case which are entirely unsuited for the other purpose.

It is possible to show an accurate picture of the world only on a globe. The surface of a globe cannot be projected onto a flat map without distortion. Since the globe is not a convenient thing to carry around and since it cannot be printed in school books, flat maps are substituted.

Map makers decide how to draw flat maps so that the distortions will not mislead us in our understandings of the world. In determining which distortions to allow in making maps, men have been guided by the use to which the maps were to be put. Generally, the distortions have been arranged so that approximately true relationships could be seen on a flat map among those places and in those regions of greatest importance. These regions were determined, to a large extent, by the means of transportation existing at the time the map was drawn.

Obviously, map makers who lived in the days when transportation was chiefly overland or by sea could not portray an air world. In those days distortions were allowed near the arctic and antarctic zones simply because no one ever traveled in those ice-bound areas. The Mercator projection is, therefore, a map drawn by men who had never heard of air transportation. It is a map designed to be used in a sea world, when relationships among people were determined by the routes of sea-going vessels.

The Mercator projection is very misleading in many respects. For example, Greenland appears to be much larger than the United States. Actually, if you look at it on a globe, you will see that it is much smaller. China is shown as lying across the Pacific Ocean from California. But actually the direct route from New York to Chungking lies directly over the North Pole. If we base our Air-Age attitudes and planning on the Mercator map we will certainly find ourselves in a serious dilemma.

THE HEMISPHERE MAP

Sea-world maps have caused many ideas and attitudes to develop which are fundamentally wrong in an air world. One such idea which prevails in the minds of many people is that this world is divided into eastern and western hemispheres. Nothing could be farther from the truth. It is simply an idea born in an age when the relationships among people were determined by the separation of oceans. This idea is a very poor one for people to have who live in the age of flight and it could lead to serious consequences if not disaster for the United States and its neighbors.

In order to express this old sea-world idea, many maps since the days of Mercator have been divided into eastern and western hemispheres. The western hemisphere was separated from the eastern hemisphere on one side by the Atlantic Ocean and on the other by the Pacific Ocean.

These were convenient separations of the world when all trade and communication were by sea. In those days you would have sailed eastward across the Atlantic Ocean or westward across the Pacific to go from western to the eastern hemisphere. No one really much cared where you would go if you proceeded north from Canada or Russia. No one ever went that way except a few courageous explorers.

In the air world, however, bombers and transports fly across the arctic region as readily as ships sailed the oceans. These new routes have changed the relationship of these hemispheres, so that now we must revolve them until they touch at the North Pole. The position of the hemispheres in a map showing this new relationship is quite as accurate as a map on which the hemispheres were placed side by side. But the "eastern" hemisphere is now north of the "western" hemisphere. To go to Russia, which was in the "eastern" hemisphere, we would fly north from the United States, which was in the "western" hemisphere. We are saying that east is north of west. This is actually true, but the use of old sea-world terminology makes it a very confusing statement.

The ability of the airplane to fly in any direction regardless of geographical conditions has made meaningless the idea of hemisphere. In the Air Age the world is "one place." It is a unit that cannot be divided up into arbitrary parts. This is a new idea on which our Air-Age attitudes should be based.

AIR MAPS
NORTH-POLAR PROJECTION

In order to express this idea, as well as to show the importance of arctic air routes, map makers used another picture of the world called the North-Polar Projection. This was one of the first Air-Age maps.

The North-Polar projection has advantage over many other maps in presenting a picture of the world of the Air Age. This map shows how the large land masses of the earth cluster around the Arctic Ocean. On this map the Atlantic Ocean becomes a rather insignificant body of water and the Pacific Ocean takes on its true importance as a vast area spreading half way around the earth. From this map we can see that the shortest and most direct routes from the United States to Russia and China are not via the Pacific, but rather almost entirely overland by way of the arctic region.

Since we are using maps to express ideas about the Air Age, we need to go one step further and eliminate all continental shorelines, for air is a universal ocean in which there are no barriers or borders. A North-Polar projection which shows merely the names of important cities illustrates the idea that all places, regardless of their relative continental locations, are equally accessible by air.

The North-Polar projection, however, also is merely an expression of an idea. In this picture the North Pole has been made the point from which other parts of the world radiate. But the North Pole is no more the center of the world than any other place on the surface of the globe. The distortions on the North-Polar map are very pronounced in countries below the equator, such as South America, Africa and Australia.

Then, too, in the case of the North-Pole projection, the shortest routes between places in the world are straight lines only if they pass over or near the North Pole. Thus a straight line between New York and Capetown on the North-Polar map passes over West Africa, while actually the shortest route lies entirely over the Atlantic Ocean.

UNITED STATES-CENTERED MAP

The United States-Centered Map eliminates some of these difficulties and helps to clarify the new ideas of world relations for Americans. This map is also a polar projection, but instead of having the North Pole as the center, or pole, this map uses the geographical center of the United States as the center of the world. Therefore, on this map the shortest, most direct routes to every place in the world from

the center of the United States are shown as straight lines. We can be quite certain that any attitudes which we may develop by studying this United States-centered map will be reliable for planning our Air-Age relations with our neighbors.

The "eastern" and "western" hemispheres have completely disappeared on the United States-Centered Map. It would take expert cartographers to draw the lines which have heretofore separated the "eastern" and "western" world.

Not only are the old hemispherical ideas eradicated, but eastern and western civilization get rather badly mixed up. It is difficult to visualize where the Orient begins and the Western world ends. Under the impact of flight the world has become a unit in which integration rather than separation must govern our basic attitudes. This map expresses this Air-Age idea.

The directions of east and west, so familiar to those of us who were brought up on the Mercator projection, are difficult to point out on this map. West actually follows the elliptical equator in a clockwise direction. East is in a counter-clockwise direction.

The United States-Centered Map suggests new ideas in relation to the routes over which we go in getting from the United States to other places in the world. For example, in the days of ocean transportion people traveled from New York to Calcutta, India, by way of the Mediterranean Sea, Suez Canal and the Indian Ocean. In war time our ships had to go around Capetown or Australia. But the direct air route from New York to Calcutta lies over Canada, the North Pole, central Russia and China. The air distance is practically half of the war-time sea distance.

Would you believe that St. John's, Newfoundland was on the direct route to Tunis in North Africa; or that Fairbanks, Alaska was on the way to Shanghai, China; or that Denver would be a convenient stopover between Tokyo and the Panama Canal; or that Berlin and Chicago are separated by arctic wastes and very thinly populated regions; or that Natal, Brazil is on the air route to Capetown, South Africa; or that to go from San Francisco to Moscow the quickest way would be over Canada and Spitzenbergen; or that Hawaii, Midway, Wake, Guam and the Philippines were thousands of miles off the air line to Japan and the Orient? You should believe these facts. It is quite true that these relationships have always existed, but they were meaningless until the airplane came along to make these routings practical. We must give these facts a generous place in our minds, for only upon them and others like them can we build a solid foundation for worthwhile attitudes in this Air Age.

GLOBES

Since we can secure an accurate visualization of the world only by using a globe, we should make more use of this device than has been the practice in the past.

A globe is a scale model of the earth designed to express certain ideas or physical conditions. Many such models have been created since the time of Crates (150 B. C.) who was said to have built the first globe. The oldest terrestial globe extant was constructed by Martin Behaim of Nurmberg in 1492. These early globes were designed primarily for the purpose of picturing the known habitable lands of the earth. They were merely expressions of existing ideas of the world and were especially helpful in getting people to look upon the earth as a spherical, celestial body, rather than a disk or wafer.

The tremendous interest which followed in the wake of the voyages of Columbus, Magellan and the Polo brothers, stimulated the use of globes for the study of physical and political geography. Globes were designed to show the boundaries of continents, countries and colonies, the routes of earthbound transportation, topography, vegetation belts, climatological elements and meteorological conditions. Since no single globe of reasonable size could be constructed to show all the geographical, political, economical and ethnological features of the earth, it has been necessary to design many different types of globes, each for a specific purpose. The Air Globe is the most modern addition to this long line of world models. Its purpose is primarily to illustrate Air-Age relationships among peoples of the earth and to assist in the visualization of the universal character of global air transportation and communication.

The Air Globe is a representation of the world of the Air Age. It portrays the boundaryless character of the universal ocean of air. It illustrates the fact that, when we travel and communicate by air, all places and all peoples are equally accessible. It provides the means by which we can visualize the great-circle relationships which exist among peoples of the air world, illustrating the essence of air—unity, universality and freedom.

The most outstanding characteristic of the Air Globe is its lack of earthly geographical features. The outlines of continents, mountain ranges, rivers, arctic wastes and other physical properties of the earth-bound world have been eliminated. Such barriers, geographical elements and boundaries are of purely academic interest in the Air Age—and may tend to obstruct straight thinking in regard to the problems of the air world.

The lack of relationship between air and earth is felt the instant we leave the ground. We have all experienced that sense of detachment and freedom

as our plane drones at a seemingly leisurely pace through the sky. In fact, when flying above the clouds we are so removed from earthly considerations that we must check our position by radio and then refer to a map of the earth in order to determine whether water, land or desert lies beneath the clouds.

On the Air Globe only the names and locations of places are shown—places where people make their homes. Whether these land marks take the form of islands, continents, peninsulas or isthmuses is of little importance in establishing the relationships which exist among peoples in this Air Age.

CONCLUSION

The impacts of flight on society, international organization and relationships among peoples are so vast as to require the development of new attitudes toward the world in which we live. Undoubtedly, the suggestions which have been offered are only preludes to the general overhauling of curriculum content which will be required if we are to educate youth in the ways of life in an Air Age.

Teachers in America have a great opportunity to lead the way in the enlightenment of the world to the proper use of air. America, the birthplace of flight, is now recognized as the leading country in the development and manufacture of airplanes. Educators have a particular responsibility to see that along with the advancements which are made in engineering and the art of piloting, we also move forward in our ability to understand the sociological consequences of the act of flying and direct the use of air toward the creation of a good life in the Air Age.

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Geography is the study of the relationship between man's activities on the one hand and the elements and conditions which make up the natural environment on the other; that is, how man is adapting and adjusting himself to conditions in the natural environment in specific regions. Furthermore, the adjustments are not static, since man is constantly readjusting, as further knowledge of affecting conditions becomes available.

The Theme of Modern Geography

By ZOE A. THRALLS
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The field of modern geography is a "science of relationships." It is the study of the mutual relation between man and his natural environment. Activity and relationships are the dominant ideas.

THE USE OF MAPS IN GEOGRAPHIC INSTRUCTION

In geographic instruction maps have a distinctive function, as they present certain types of informa-

tion better than any other medium. Their major function is to show the following descriptive facts concerning cultural and natural items:

1. Relative and exact location.
2. Relative and exact area or extent.
3. Relative and exact distance.
4. Shape of a given human or natural item or patterns of their distribution.
5. Elevation and slope of land, and
6. The distribution of cultural and natural items.

OBJECTIVES

The major objectives of map instruction are determined by the distinctive function of maps and consist of the development of the following abilities, understandings, and habits:

1. The ability to translate a map into landscape imagery.
2. An understanding of the distinctive types of information that can best be expressed in maps.
3. The ability to read such types of information from maps and to raise questions concerning the facts shown.
4. The ability to translate into map language, information expressed in statistics and reading material or secured from field studies, and
5. The habit of consulting maps.

The first objective is fundamental, as training in map reading hinges on the ability to translate any map into landscape imagery. If one cannot translate the map symbols into landscape imagery, he cannot read a map any more than he can read the printed word without translating the words into concrete images and ideas for which those words stand. Therefore, the first rule for training children to read maps is that every map symbol introduced must be visualized first. Therefore, the first symbols introduced should be those for which he has imagery. This necessitates that the teacher help the child to link his experiences with the map symbols as they are introduced. If the child does not have the necessary apperceptive background, pictures may be used to give the requisite imagery. These symbols should be for specific things such as a certain river or a specific city. After a few experiences with these symbols for specific features or items, the child can be led quickly to note the common likenesses and differences and to make a generalization concerning the type of symbol to be expected for any river, coast, city or other specific feature.

The second rule to be observed is that the map symbols should be selected in terms of the major ideas required in developing the specific unit and introduced only as needed. For instance, in the fourth grade if the first unit is "Life in Amazonia," then the symbols for river, coast, city, ocean, land

should be the ones introduced. In connection with the introduction of the first symbols, children need to read direction on the map. The idea of direction, of course, comes before the map. The teacher should be sure that the children know north, south, east, and west. They should have the feel of direction in connection with the region before the map is introduced. For instance, in connection with the unit on "Life in Amazonia," the children should realize that the Amazon flows from west to east, that as you go up the Amazon you are going west, and that Para is on the south bank. As the map is introduced, the children learn to read directions on this specific map and the relation of the things to each other.

SEMI-PICTORIAL MAP SYMBOLS

Gradation in the development of map understandings and abilities involves a consideration of the difficulty of the symbols and the types of ideas. The simplest type of map symbol is the semi-pictorial, which is a sign somewhat resembling the thing for which it stands. For instance the wavy line stands for a river, the dot for a city, the blue mass for water. These are single symbols for specific items. Then there are the complex semi-pictorial symbols such as the symbol for a strait or a peninsula. Each of these is composed of a certain combination of land, water, and coast symbols. One combination means a peninsula; another, an island. The single symbol must be familiar to the child before the complex is introduced.

NON-PICTORIAL MAP SYMBOLS

The second type of symbol is the non-pictorial which, by the use of dots, color bands, lines, and shadings, signifies natural items such as lowland, highland, conditions of rainfall; cultural items such as crop production and population density. The isoline is another kind of non-pictorial symbol, such as isotherms, isobars, isohyets. These indicate patterns of natural or cultural items. Also, there are the meridians, parallels, and other lines composing the map network; and finally, there are the legend or key symbols of scale of miles, feet, or other units of measure.

DESCRIPTIVE AND INTERPRETATIVE IDEAS

In teaching maps not only should the type of symbol be considered, but also the type of idea to be secured from the map. There are two types of ideas, descriptive and interpretative. The descriptive ideas are the simpler and are secured from experiences in observing, recognizing, and naming the map symbols and in visualizing the natural or human items symbolized by them. Descriptive ideas are concerned with location, distance, shape, extent, direction, distribution, elevation, slope, pressure, temperature, and the like. Interpretative ideas are the result of one's

own reasoning based on a comparison of two or more descriptive ideas gained from a map. This comparison should lead to a realization of relationships which seem to exist between two or more facts or sets of facts shown on the maps being read. Such relationships as the following may be read from maps; relationship of railroad pattern to topographic features, relationship between population pattern and amount and distribution of rainfall, relationship of crop distribution to topography and precipitation.

FOURTH GRADE MAP SKILLS

By the end of the fourth grade, the children should have the ability to recognize and to visualize all the semi-pictorial symbols needed in the units developed during the year. They should have the ability to secure descriptive ideas concerning relative location, distance, direction trend, size, and extent of all cultural and natural items represented by the semi-pictorial symbols. They should be able to express descriptive ideas in respect to location and distance in general terms without the use of any earth line, and in general terms with the use of the equator, the tropics, and the Arctic and Antarctic circles. They should have the ability to use these descriptive ideas in gaining ideas of relationship between man's activities and the natural environment: "B is farther from the equator than A and, therefore, the winter days should be shorter, and people living there would use more electricity in their homes in December than the people living at A"; "the rainfall in region C is less than ten inches and, therefore, the population is likely to be sparse, and nomadic herding is probably the chief activity of the people." *At the end of the fourth grade, the first real map of the world is introduced and all the symbols which have been developed gradually during the year are now tied together.*

FIFTH GRADE MAP SKILLS

In the fifth grade additional semi-pictorial symbols are introduced as needed and the non-pictorial symbols such as color bands, lines, and dots are developed. By the end of the fifth grade the children should have the following abilities:

(1) To recognize such non-pictorial symbols as color bands, dots, lines, (2) to secure descriptive ideas concerning the conditions symbolized such as what twenty inches of rainfall actually means (3) to secure descriptive ideas concerning the distribution and characteristics of cultural and natural features and conditions symbolized, (4) to express these ideas in specific terms through the use of map legend, and (5) to use these ideas in gaining ideas of relationship, for instance, the ability to see the relationship between the topography of western United States and the location of railroad lines. At this stage the east-

west lines or parallels and also the scale of miles are introduced.

Sixth and Seventh Grade Map Skills

In the sixth and seventh grades these abilities are strengthened by practice in new situations. At the beginning of the seventh grade, longitude is introduced and used from there on. The isoline symbols are introduced in the eighth grade or senior high school, depending upon the course of study.

Map Use in Developing a Unit

During the development of a unit, there are four places where maps may be used effectively:

(1) In motivation or raising a problem, (2) in assimilation or problem solving stage, (3) in the summarizing and application step, and (4) in testing. The map is especially valuable for expression activities during the assimilation period and also in the summarizing and application stages. The following is an illustration of how a map may be used in raising a problem.

On the outline map on which you have colored other parts of the United States, color the eight northeastern states (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey and Pennsylvania).

As you look at the map of the United States, what differences do you notice between this group of states and the other groups of states? (Smaller size and a larger number of cities.) If there is a large number of cities, what does that suggest to you? Look at your population map and the map showing the distribution of cities. Do these maps verify your suggestion? Count the number of cities in the northeastern states which have a population of more than one hundred thousand. Compare this number with the number of cities of this size in each of the other groups of states which we have studied. Now, what statement can you make definitely about the population in the northeastern states? What question does this suggest? (Why are there more large cities and more people in this section?) Before trying to find an answer to this question, look again at your map showing the distribution of cities. What is another thing that the map shows you about these cities? (Concentration in specific spots.)

During the assimilation or problem solving stage, maps are used as a source of information.

In summarizing and application steps, maps are used upon which the children collect items in a new way; for instance, at the close of a study of the United States, a map may be made of the United States showing by colors the rank of different sections in manufacturing.

Developing Map Skills

In conclusion, the steps in developing map abilities may be stated as follows:

1. Every map symbol introduced should be visualized first.

2. The first map used should be a simple map of a region or area with uncaptioned symbols. Uncaptioned symbols are desirable, as tests have shown that children tend to read the printed matter instead of the map symbol.

3. A map symbol should be introduced only as it is needed in a specific unit to reach a particular major understanding.

4. The map symbols introduced are selected in terms of the major ideas needed in developing a specific unit.

5. Semi-pictorial symbols are introduced first, followed by the non-pictorial in the order of difficulty.

6. Descriptive ideas are the first ideas secured from maps as they are the easier type.

7. Interpretative ideas are more difficult as they are the result of one's own reasoning based on a comparison of two or more descriptive ideas gained from a map.

8. The children should learn to read cultural facts from a map first, and then there should be developed the ability to raise questions concerning the facts shown.

9. New types of maps should be introduced from time to time as needed, always visualizing the new symbol, and translating the symbols into landscape imagery of which immediate use is to be made.

10. After the fifth or sixth grade, development in ability to read maps is made possible chiefly through repeated and intensive interpretation of the types of maps already introduced.

11. Training in map interpretation includes developing the ability to express many types of facts on maps.

Globes, Graphs and Museum Materials

A globe is the best representation of the earth that we have and consequently is invaluable in geographic instruction. On a globe the meridians and parallels are represented in their correct relations. The scale of distance is the same in all directions. Areas are represented correctly in relation to each other. The fact that teachers fail to supplement map work with globe study explains in part why the majority of people have so many inaccurate ideas about the world.

Teaching children to use globes effectively in geography study involves the developing of an understanding of the specific function of the globe, and of the ability to read the distinctive facts which globes give directly and indirectly. The specific func-

tion of the globe is to show the relation of any part of the earth's surface to the whole.

FROM THE GLOBE SUCH DISTINCTIVE FACTS AS THE FOLLOWING MAY BE READ:

(1) Approximate distance and direction of any region on the globe from the equator, (2) approximate length (from north to south) of any region, its width (from east to west), and its approximate size, (3) direction and approximate distance of any point on the earth's surface from any other point, (4) approximate distance, in degrees, of any place on the earth's surface from the prime meridian. From the above facts shown on the globe, the following information may be inferred: (1) approximate lengths of days, sun paths, moon shadows at any given place, (2) approximate length and time of occurrence of seasons (winter, summer), (3) noon time of any place as compared with noon time on the prime meridian. Furthermore, the children should be able to apply such distinctive facts when needed in explaining human activities in a region and should form the habit of thinking of any region in terms of the relationships between human activities and those natural conditions resulting from the location of the region in a specific part of the earth.

SYMBOL FOR THE WHOLE WORLD

In teaching children to read and interpret globes, the same principles apply as in map instruction. The globe, as a sign or symbol for the whole world, should be introduced after the first unit so that the children can see the location of the region on the globe, and can also see what a little space it occupies. A blank or slated globe is more desirable to use at this time because the attention of the children can be concentrated on the specific region and the specific map-globe symbols used. Furthermore, the small space occupied by the region on the blank globe gives them a feeling of the vastness of the earth.

FIRST USE OF GLOBE

During the first use of the globe nearly always two questions come up. One is "Why does the earth seem flat?" or "How do we know the earth is round?" The other is the problem of "up" and "down." The explanation used to clear up the first question depends upon the ability of the class. Some illustrations which may be used are: "By traveling we have found that the earth is not flat. Also men who study the sun, moon, and the stars have noticed that when the earth casts a shadow on the moon, the edge of the shadow is a curved line." The teacher also can show why the earth seems flat by drawing on the board three circles of different sizes and then mark off the

same distance on each circle. The children will see that the three or four inches on the very large circle is almost a straight line; on the other hand the same distance on the smaller circles is a curved line. Comparing these to the size of the earth will bring a realization it is because we see such a tiny part of the earth that it seems flat to us.

"UP" AND "DOWN" DIRECTIONS

The ideas of "up" and "down" are more difficult, but the children must be taught to think of "down" as toward the center of the earth and "up" as away from the center. Probably using a magnet and comparing the pull of the earth (gravity) to the pull of the magnet is the best way to secure a beginning realization and a basis for the correct use of "up" and "down."

FOURTH GRADE GLOBE SKILLS

By the end of the fourth grade the children should have: (1) The ability to recognize the same symbols as have been learned on maps, (2) the ability to recognize equator, the tropics, the arctic and antarctic circles, the north-south lines, the east-west lines, and the continents and oceans, (3) the ability to read directions on a globe, (4) the ability to read comparative location in terms of nearness and farness in respect to the equator, to either of the tropics, to the circles, or to the poles, (5) the ability to read into the globe natural conditions and human activities associated with the above locational facts.

If the above abilities are developed and the habit of using a globe is formed in this first year, then with a sixteen-inch physical-political globe in the classroom at all times the children will learn to interpret it as they do a map. Their ideas of relative location and relative size will be formed accurately, and much reteaching will be eliminated.   ✪ ✪ ✪

M. MOTION PICTURES[1]

As soon as the motion picture became a practical reality, serious minded individuals recognized that it had value for education. As early as 1910, George Kleine published in New York, a 336 page "Catalogue of Educational Motion Pictures." It contained a foreword by the anthropologist, Frederick K. Starr of the University of Chicago; a letter dated December 20, 1909, by Thomas A. Edison; a quoted statement from P. Chambers, Secretary of the Zoological Society of London; and a list of 1065 film titles which were classified under 30 main topics.[2]

Characteristics and Use of Educational Films[1]

By
F. DEAN McCLUSKY

One notable feature of the catalogue was the enthusiasm expressed by Kleine, Starr, Chambers and Edison for the value of the motion picture in education. For example, Kleine stated that "educators will welcome this opportunity to instruct their classes in any of the above subjects by means of first-class motion pictures. Education thus imparted is never likely to be forgotten, and pupils who are slow in memorizing text-book instruction absorb the same knowledge very readily and rapidly when conveyed by moving pictures, which teach as no words can do." (10: P. 2).[3] Starr wrote that the moving picture "is not only the greatest impulse of entertainment but the mightiest force of instruction." (10: P. 3). Chambers declared, "They (motion pictures) are not only fascinating as spectacles, but they enable the events in the life-history of many animals, and in particular of the lower animals, such as insects, to be displayed to a large audience in a fashion far beyond the possibilities of ordinary photographs even accompanied by the most vivid descriptions." (10: P. 8). And Edison said, "Motion pictures are and will be a great factor in the education of the public and your catalogue shows the possibilities of motion pictures in teaching the public science, history and geography, as well as a knowledge of how other peoples live, work and play." (10: P. 4).

The catalogue also featured films that had been secured from many producers in America and Europe. The sources included the "Chas. Urban[4] Trading Co., of London; Gaumont, Eclipse and Pathe, on the Continent, and Selig, Essanay, Biograph, Edison Manufacturing Co., Lubin, Kalem, and Vitagraph Co., in the United States."

Finally, it is interesting to note that the films were "technically leased, not sold" and the price was quoted at 13 cents[5] per foot. In other words, the unit was the foot not the "reel," as is now the case. Furthermore, the films were to be "delivered under the condition that the lessee does not sell, copy or rent them to theatres," (10: P. 7) which restriction established a differentiation between educational films and theatrical films in terms of use.

The appearance of the Kleine catalogue represented the first major effort in the United States to make motion pictures available for educational purposes. The men back of this enterprise wisely recognized that it was just the beginning, for Kleine wrote that, "It will require years of further effort and great sums of money to even scratch the surface of the rich mine which lies at our feet. No single commercial, scientific or educational organization can hope to accomplish more than a small fraction of the work to be done," (10: P. 5) and Starr stated, the value of the moving picture "cannot be measured now, but another generation will benefit more largely through its influence than we of today can possibly realize." (10: P. 3).

The interest in the educational motion picture spread rapidly following World War I. By 1924, several corporations were engaged in the production of educational films, for example the Society for Visual Education, Inc., Yale University Press and Pictorial Clubs. Universities sponsored research, exemplified by the work of Weber at Columbia, Freeman and McClusky at Chicago, and Davis and Skinner at New York University. Professional educational organizations such as the National Academy of Visual Instruction and the Department of Visual Instruction of the National Education Association were established to study and to advance visual education. Magazines specializing in the field appeared, namely: *Moving Picture Age, Visual Education, Screen,* and *Educational Screen.* Museums rendered increased educational services through motion pictures. Also many cities, including Chicago and New York, as well as universities established bureaus or departments of visual education which made a point of

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1. A section of this article appeared under the title, *The Nature of the Educational Film* as Chapter 2, by the author, in *Film and Education,* Godfrey Elliott, editor. The Philosophical Library, New York, 1948. It is adapted here by permission of the publishers.
2. The main classifications were: agriculture, aeronautics, animal life, bacteriology, biography, biology, botany, entomology, ethnology, fisheries, geography, geology, history, industrial subjects, kindergarten studies, mining and metallurgy, microscopy, military, naval, natural history, ornithology, pathology, pisciculture, railroads, religion, scenic, tropical, travel and zoology. Descriptions of the contents of each film were given and in many cases a descriptive order of scenes was included.
3. The first number in the bracket refers to the corresponding number in the list of selected references at the end of this chapter.
4. Especial credit was given to the work of Charles Urban, "whose unceasing efforts of the past ten years have been largely responsible for the motion picture films which are now at the disposal of educators." (10: P. 6).
5. Certain titles were subject to royalties which costs were added to the quoted figure.

purchasing and distributing educational films. The University of Wisconsin was one of the leaders in this activity.

More than forty years have passed since the publication of the Kleine, "Catalogue of Educational Motion Pictures." During this period the use of motion pictures in education has increased steadily, but not to the extent nor in the direction predicted by Edison. In a statement appearing in McClure's magazine for November, 1922, he said: "I believe that the motion picture is destined to revolutionize our educational system, and that in a few years it will supplant largely, if not entirely, the use of textbooks in our schools." That the textbook is a basic tool in instruction and will continue to be is clear. This is true despite its abuse by those teachers who, for example, assign "the next 10 pages for tomorrow's lesson." Both the motion picture and the printed page have a contribution to make as instructional material. Their function is complementary and not exclusive.

We have learned much about the value of films in education through research and experience during the past four decades. However, our understanding of how to use motion pictures in teaching is limited because we have not progressed far with our definitions nor with our analyses of the variety of educational objectives which the film may serve. It is the purpose of this chapter to extend our horizons with respect to the educational value of motion pictures. We will consider types of films in terms of use. The emphasis will be on many kinds of utilization rather than a single formula because the theatrical plush-seat-look-listen-and-be-entertained attitude toward the motion picture too often carries over into the school and dominates its educational use.

VARIED APPLICATIONS OF THE FILM

The motion picture from the broad educational point of view is essentially a multiple method of communication. It is especially effective as a technique for telling a story. It presents facts realistically. It dramatizes human relations and events. It arouses emotions. It transmits attitudes. It records and reproduces phenomena for scientific study and analysis. It depicts the imaginative. And it can enable one to see the unseen. By means of the sound motion picture, the whole gamut of human experience may be communicated from teacher to learner wherever a learning-teaching situation exists.

From the viewpoint of lifetime learning, the motion picture is not only applicable at all levels of formal education, but it also may be used for the communication of ideas, attitudes and experiences to the people outside of the schoolroom. It has proved its effectiveness in adult education, in industry and in sales training. In its early stages of development
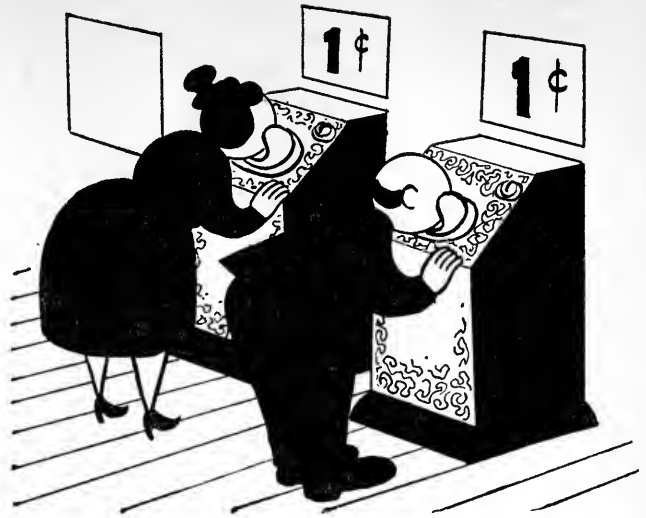
in America, the motion picture found its support in the hundreds of thousands of relatively untutored people who flocked to the penny arcades and nickelodeons to be "amused" and "to learn" by seeing. The film spoke a language, then as now, which the common man could understand. The impact which the motion picture has made upon the American public in the past fifty years is immeasurable. As a method of effective mass communication the film is unsurpassed. Under the cloak of entertainment the theatrical cinema has tutored the American public with respect to mores, manners and customs. It has also carried its messages to all lands. It has developed desires which have had a marked effect upon behavior. While the philosophical and ethical values which resulted have been the subject of much debate, the fact is that the motion picture is a powerful educational tool whether it be used to "entertain" or to "teach."

There have been many attempts to define the educational film. George Kleine roughly defined "educationals" in 1910 by stating:

"In a sense, all subjects are educational, but in classifying a mass of motion picture films for educational purposes the line must be drawn about a reasonable area.

"A dramatic or comic tale in motion pictures, laid in some foreign country, is educational in so far as it shows the manners, customs and environment of the people; an Indian tale, the habits of aborigines. But there must be a halt before we reach fanciful ground, where there is danger of accuracy being sacrificed to dramatic effect.

"Here and there a subject has been included in this list which lies on the border, and perhaps outside of it. But there is an educational application in every instance.

"The word 'educational' is here used in a wide sense, and does not indicate that these films are intended for school or college use exclusively. They are intended rather for the education of the adult as well as the youth, for exhibition before miscellaneous audiences, as well as for more restricted use." (10: P. 1).

By the early nineteen twenties there were many who wanted a more distinct line of demarkation drawn between the "entertainment" and "educational" motion picture.

For example, in 1923 the author was commissioned by the National Education Association's Committee on Cooperation with the Motion Picture Producers and Distributors of America, to study the status of visual education throughout the United States.[6] In the course of the investigation, the author was privileged to have, then and later, many conversations with the late George A. Skinner who was at that time President of Educational Films Corporation of America. This company produced short subjects for theatrical release, chiefly. Skinner repeatedly stressed the necessity of making a sharp distinction between "educational" and "theatrical" films. His favorite way of stating the issue was, "On this side of main street we should have educational films, on the other theatrical." As late as 1933 he wrote the following, "While pictures called 'educationals' [have] appeared, yet in almost every case screening [shows] that teaching values [have] been submerged in entertainment values — sometimes only amusement values. Such pictures are not pedagogical." (18: P. 325). The motives for making such a distinction were mixed. They stemmed in part from the desire of the producers, distributors and exhibitors of films for theatrical use to protect box office receipts. The producers reasoned that if the "educationals" could be typed in a non-theatrical pattern it would eliminate a potentially powerful source of competition. It was suggested that "educationals" should be confined to a straight presentation of fact, that they should be in effect rather unimaginative. Many educators in turn, fearful of the possible unmoral effect of "theatrical" films shown in schools and viewing with alarm the possible introduction of "entertainment" into formal teaching, likewise supported the typing of "educationals" into a dull-illustrated-lecture pattern.

To separate motion pictures into two classifications (1) those which entertain and (2) those which educate, is not paralleled in the teaching of literature and drama in schools. Many novels and plays which were written in the first instance to entertain are used in schools for highly desirable educational purposes. The novels of Charles Dickens and the plays of Shakespeare were not written as school text-books, but no one would question their educative value in the study of English literature. The distinction is rather one of *use* than of something inherently different in the nature of the films themselves. The motion picture *David Copperfield* was produced to entertain, but is highly regarded by teachers of English as having educational value in studying the work of Charles Dickens.

Obviously not all films made for entertainment purposes would be selected by educators for school use. Teachers select films for purposes different than those in the minds of theatrical exhibitors. Just as teachers are careful to select educationally desirable novels and plays for use in teaching literature, so do they evaluate films for classroom use. The demands of education and of entertainment are not identical; but a film that is entertaining may be educative as well. And a film which may be highly educational may also have distinct value when shown in theatres. To rigidly classify films as educational on the one hand and entertaining on the other is not sound.

The point of view expressed above is supported (1) by the fact that, as time passes, more and more films which were first produced for theatrical exhibition are being made available for school use either in full length or in edited versions and (2) by the failure of the attempt to develop an unimaginative-factual-film pattern for *all* "educationals" because teachers and pupils alike found them too dull and uninteresting by contrast to be of much value.

A Definition of the Educational Motion Picture

How then may we define the educational motion picture? An answer to this question may be worded as follows: the educational film is one which contributes to the achievement of desirable educational goals by making effective use of the motion picture as a medium of communication. It will be noted that this definition emphasizes the necessity for (1) a concrete positive contribution through use and for (2) a proper employment of the motion picture medium. The definition further assumes that users of films in educational situations are clear as to the goals which are to be achieved.

With this definition in mind, it is possible to outline criteria which would enable experienced educators to identify a motion picture as possessing educational values. But it is clear that a comprehensive outline of criteria would be very complex and difficult to administer with panels of teachers. Subject matter interests and the needs of students vary so widely that teachers, even with a common set of ultimate educational goals in mind, will see different values in a film as teaching material. This in part explains

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6. The report of the Committee, Charles H. Judd chairman, was published in Washington by the N. E. A. in 1923.

why many attempts to administer general evaluations of films have met with little success. The educative value of a film depends upon the purpose which the teacher has in mind and the use made of the film to achieve that purpose. Furthermore, the purposes of education are broad and multiple. The theatrical producer can evaluate the success of a motion picture by its popular appeal reflected in box office receipts. But in education, the value of a film is not so easily measured. In the theatrical field it is possible to develop production patterns which are reasonably sure of box office success. Whereas in education, the types of films which can be used successfully are so diverse that producers seeking a simple production formula for educationals find that no such pattern exists. Obviously, a classification of types of educational films is indicated.

EARLY CLASSIFICATIONS

There have been many attempts to classify types of educational films based on educational considerations. As early as 1923, Frank N. Freeman writing in the *School Review* developed a classification of four major types of educational films which he offered as a working basis. His four types were: (1) *the dramatic,* either fictional or historical; (2) *the anthropological and sociological,* differing from the dramatic in that it is not primarily based on a narrative or story; (3) *the industrial or commercial,* which show the processes of modern industry and commerce; and (4) *the scientific,* which may be classified into subgroups corresponding to the individual sciences such as the earth sciences, nature study, et cetera. (4: P. 344).

Andrew P. Hollis, in 1924, suggested three classifications for films used in educational institutions:[7] "(1) *Text films,* meaning those used to definitely illustrate the text-book in class instruction; (2) *general education,* when the material is fairly educational, but is not used specifically for a class topic; and (3) *entertainment,* where that is the obvious use and purpose." (8: P. 27). Later Hollis added a *fourth* type to this list, namely; *the propaganda film,* which

"embraces a large group of educational films designed to aid some 'cause' or business, and constructed to appeal to popular audiences." (9: P. 3-7).

Since it is the purpose of this chapter to give consideration to types of films which may be identified with learning at all levels from kindergarten through adult education, Freeman's classification for our purposes is limited somewhat in scope. He was thinking primarily in terms of the upper elementary and secondary levels of education. Furthermore, it will be noted that Freeman's classification is based chiefly upon subject matter considerations, although he makes reference to the functional characteristics of the narrative or story types of film as contrasted with the factual type of film presentation. On the other hand Hollis based his differentiation on the type of appeal made by the film and the purpose in the mind of the producer. Like Freeman he recognized that certain kinds of films have value in education even if they were not produced specifically for the classroom. The work of Freeman and Hollis in classifying silent films is noteworthy from an historical point of view. Also it represents basic thinking of a constructive nature.

RECENT CLASSIFICATIONS

The development of the sound motion picture has resulted in new attempts to classify educational films. At least thirteen published discourses dating from 1937 to the present have suggested film types. They will be summarized briefly in the following outline.

Hoban, Hoban and Zisman (1937) list "seven overlapping classifications" of instructional films, viz.: (1) the demonstration of a process; (2) the demonstration of a skill; (3) the dramatic; (4) the explanation of an industrial product; (5) the emotional; (6) the documentary; and (7) the development of background. (6: P. 121).

Metcalf and Christensen (1938) writing from the viewpoint of planning the production of sound films for business purposes list the eleven "types of pictures most commonly utilized" as follows: (1) dramatic-dialog; (2) narrative; (3) dramatic-dialog-narrative; (4) newsreel; (5) picture-within-a picture; (6) cartoon; (7) musical; (8) comedy; (9) marionettes; (10) address; and (11) stop motion. (16: Pp. 21-25).

McKown and Roberts (1940) classify films suitable for school use into six groups, namely: (1) classroom, which included four subdivisions, namely, (a) process, (b) general informational, (c) demonstrating a skill, (d) dramatic; (2) industrial; (3) school-made; (4) documentary; (5) newsreels; and (6) photo-plays. (15: P. 158).

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7. A. P. Hollis, *Visual Educational Department in Educational Institutions.* Washington: United States Bureau of Education, Bulletin No. 8. 1924. Pp. 36.

Classified   Unclassified
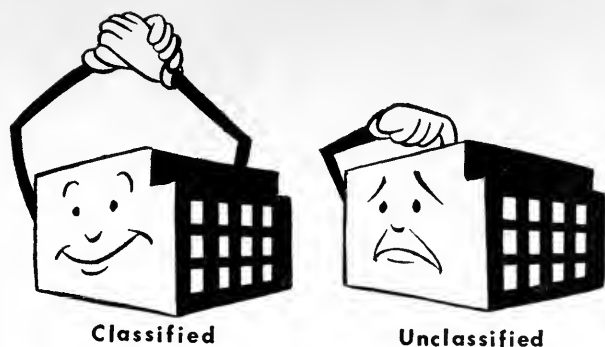
May (1944) directs attention to four rather distinct classes of films which typified the training films produced for and by the Armed Services during World War II, viz.: (1) demonstrational; (2) informational; (3) incentive; and (4) provocative. (13: P. 4).

Fern and Robbins (1946) suggest ten classifications on a basis of functions rather than instructional elements, namely: (1) technical; (2) scientific; (3) documentary; (4) historical; (5) incentive; (6) promotional; (7) cultural; (8) guidance; (9) recreational; and (10) informational. (3: Pp. 77-78).

Dale (1946) lists three classifications in discussing motion pictures in education, namely: (1) instructional; (2) documentary; and (3) theatrical-feature. (I: Pp. 183, 199, 204).

Hoban (1946) in discussing training films developed by the Armed Services classifies four types in terms of major purposes as follows: (1) orientation; (2) conduct; (3) information; and (4) instruction. (5: P. 23).

Exton (1947) classifies the Navy's training films into four categories, viz.: (1) substitutes for reality; (2) show-how; (3) explain, analyze, clarify, illustrate, define; and (4) inform, indoctrinate, motivate. (2: P. 59).

Hockman (1947) states that "there are four general types of sound films now available for use in the church." His list follows: (1) lecture-with-pictures; (2) oral-with-natural sound, dramatic; (3) musical background plus commentary; and (4) music-no commentary, worship film. (7: Pp. 35-36).

Strauss and Kidd (1948) in discussing the use of films in informal education list four types, namely: (1) instructional; (2) newsreel; (3) documentary; and (4) industrial. (19: P. 21).

McClusky (1948) dicusses and lists twelve types in terms of broad educational use. These classifications will not be given here since they will be discussed in detail later in this chapted. (14: P. 21-37).

Lottick (1950) offers four main classifications, which he subdivides further as follows: (1) instructional, (a) simulating reality of providing vicarious experience, (b) showing a process, (c) demonstrating a skill, (d) offering an analysis or clarification; (2) propaganda, (a) industrial-commercial, (b) other institutional, (c) nationalistic; (3) documentary, (a) commercial-documentary, (b) sub-documentary, (c) socio-historical documentary, (d) socio-geographical documentary, (e) propaganda-documentary; and (4) imaginative, (a) fantasy, (b) emotional, (c) escape feature, (d) quasi-documentary feature. (12: Pp. 17-19).

Kinder (1950) presents eleven classifications of "films by type or technique as well as content," namely: (1) informational; (2) skill or drill; (3) appreciation; (4) documentary; (5) recreational; (6) dramatic and episodic; (7) cartoon; (8) news; (9) scientific; (10) industrial; and (11) provocative. (11: P. 217).

As one studies these classifications it is clear that they represent many points of view. Purposes, functions, techniques, content, production and use serve as the various frames of reference. One question comes to mind, are there points in common? The answer is in the affirmative. There is general agreement: (1) that there *are* different types of films suited for use in education and that differentiations have value for teachers as well as for producers; (2) that the classifications overlap and are somewhat arbitrary; (3) that many films which were not produced for educational use at the outset, do have educational values; (4) that the emphasis in considering types should be functional; (5) that there is a place for the film, in the educative process, which appeals to the emotions, and (6) that there is a need for a clear understanding of the general purposes which the motion picture serves in education.

However, despite these points of general agreement, the classifications as a whole reveal inconsistencies which need clarification. For example, the terms "cartoons" and "newsreels" come from theatrical-program nomenclature. Yet they are included with educational classifications such as "informational," "skill," "provocative" and "recreational." The classification "industrial" is used by six authors. By definition it includes *all* films produced by or for business or industrial enterprises. The term "industrial" originated in the commercial motion picture field without reference to educational considerations. Note that Metcalf and Christensen writing from a business point of view list eleven classifications of "industrials," thus indicating the variety of types which the term includes. The label "documentary" was first used in connection with the theatrical feature, *Moana,* produced by Robert Flaherty. This term, popularized by John Grierson, is here to stay. However, I should like to pose a question. Is "documentary" definitive with respect to educational re-

quirements? In the motion picture world it is used to designate a production type ranging from the full length entertainment feature to propagandizing short subjects. If we are to base classifications on educational considerations it would appear logical to use terms which are more definitive with respect to use in education. And to avoid as far as is possible the use of terms with theatrical implications.[8]

MAJOR TYPES OF EDUCATIONAL MOTION PICTURES

The following fourteen types of educational films are based on five criteria: (1) the *use* of the film for educational purposes such as the development of skills, the building of factual background experiences, problem solving, the development of insights and attitudes, the stimulation of interests, the motivation of learning, and the development of appreciations; (2) the relationship of films to modern curricula and methods of teaching; (3) the existence of films which would serve as clear-cut examples of the type; (4) the definitive quality of the terms from an educational point of view; and (5) the avoidance of terminology which would be confusing due to theatrical connotations. The first twelve of the fourteen classifications were developed in two of the author's seminars at the University of California, at Los Angeles. Later they were employed at UCLA in the evaluation project of the Commission on Motion Pictures of the Adult Education Association during the summer of 1947. Since then, they have been used in class evaluation projects by hundreds of students enrolled in audio-visual classes at ULCA. The thirteenth and fourteenth types were suggested to the author at the Southwestern University, (Texas) audio-visual religious education workshop held in August, 1950. In short, the fourteen classifications have been tested on the anvil of experience and have been found to meet the criteria. With these basic considerations in mind the following functional types of films may be differentiated.

Narrative. The first is the *narrative film* which tells a story based on fiction or fact. The narrative film may be animated with cartoons, puppets or models or it may use actors in natural or studio settings. The narrative film informs but it also gives an orderly continuous account of an event or series of happenings. It is a type of educational film which has been in use for many years. George Kleine's, *Catalogue of Educational Motion Pictures* published in 1910 lists a few narrative films, notably *The Night Before Christmas* based on the legend by Clement Clarke Moore. The narrative film has been used for children's stories and fairy tales. Examples are *The Hare and the Tortoise* released by Encyclopedia Britannica, and *Beanstalk Jack* distributed by Castle. It has been used to tell more factual narratives such as

the story of wheat and of corn for use in the upper grades. It has been used to teach adults, an example being Walt Disney's *Water—Friend or Enemy.* The narrative type of film may use the pictures to tell the story, or it may use the voices of the actors, or voices may be given to animals, puppets, cartoon personalities or to objects. In Disney's *Water—Friend or Enemy;* the water "tells" the story. And music may be used to add to the effectiveness of the presentation. These points illustrate the extensive variety of patterns which may be employed with the motion picture to present a narrative.

Dramatic. The second type is the *dramatic film* which is primarily theatrical and is used in connection with the study of the drama and of literature, or for recreational purposes, or for the development of discriminating attitudes of theatrical motion picture appreciation. The dramatic film is more highly charged with emotional appeal than the narrative film. It differs also in that it was produced at the outset for entertainment purposes whereas most educational films of the narrative type were produced with a school or teaching situation in mind. The *Tale of Two Cities* is a good illustration of the educational dramatic film.

Discoursive. The third type is the *discoursive film* which presents a topic or series of related topics in a logical, systematic and authentic manner. It employs the style of an essay, textbook or lecture. The discoursive film is informational for it is generally produced in a typical illustrated-lecture pattern. It also gives training in following the reasoning of an orderly presentation.

Industry has made extensive use of the discoursive film to show the processes of modern industry and commerce. These films, loosely called "industrials," indicate how goods are produced, manufactured and distributed. They have been widely used in education. The Encyclopedia Britannica productions titled *Southwestern States, Truck Farmer, The Moon, Electrostatics,* and *Molecular Theory of Matter* are illustrations. *Alloy Steels,* produced by the U. S. Bureau of Mines, and *Where Mileage Begins,* produced by General Motors, are examples from industry. When it is properly made, the discoursive film is useful for introducing a topic or unit to a class, or for furnishing background material, or for summarization.

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8. This position is not in conflict with statements previously in this chapter. Films produced for theatrical purposes have value in education. Many schools use films for assembly programs, during the lunch hour and for entertainment purposes in the evening, which were not produced for school use at the outset. The plea here is to keep the semantics straight with respect to educational requirements.
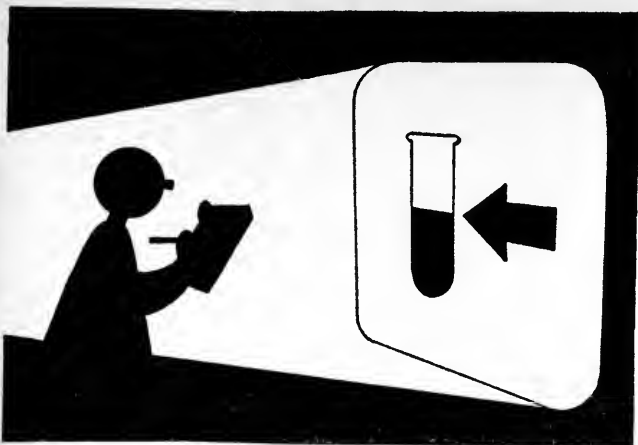
The discoursive type of educational motion picture, when compared to the dramatic or narrative film is dull. In characterizing the early educationals Mark May has said, "The first teaching films were visualizations of textbooks. They were dull and boring even as textbooks are often dry. Educational films early earned the reputation of being devoid of interest." (13: P. 4). One explanation for the dull character of discoursive films in the past has been stated earlier in this chapter. A second explanation is that the producers of the discoursive type films depended too much on verbal captions or commentary to carry the content. This resulted in the too frequent use of static illustrations; in an historical approach illustrated by maps, inanimate graphs and pictures of pioneer personages; in the failure to correlate commentary with visual material; and in the presentation of concepts which could have been taught better with slides or slide films because the subject matter required time for reflective study. However, whenever a discoursive film has been produced with a systematic sequence of motion concepts in mind the product has been rated highly by teachers. A good example from the early silent films is *The Life History of the Monarch Butterfly* produced by Society for Visual Education. Good examples of more recent sound films are *Truck Farmer* by Encyclopedia Britannica and *Winged Scourge* by Walt Disney. Such discoursive films have a valuable function in education.

Evidential. The fourth type is the *evidential film* which is used chiefly to record scientific data for study and analysis. It may also be used to make records of events for correlation with other data. In educational circles, extensive use of the evidential type of film is now being made in the natural and physical science, in the applied sciences and in physical education. Time-lapse and slow-motion photography are employed extensively in making an evidential film. For example, the botanist studies the growth and movements of plants by time-lapse pho-

tography. The ornithologist studies and analyzes the flight of birds by means of slow-motion photography and his findings are applied to the design of aeroplanes. The engineer studies the fatigue of metals by means of motion pictures. The trained surgeon's delicate operational skill is recorded in slow-motion and is analyzed for the purpose of developing better techniques in teaching the untrained student. Perhaps the most systematic use of the evidential film today is to be found in college football. It is now standard practice for coaching staffs in the large universities to make a slow-motion record of every game. Within two or three days following the game the strengths and weaknesses of plays and of the performances of individual players are analyzed.

In industry and business the evidential film is extensively used to study the performance of workers in order to develop work standards. In fact, the science of time-and-motion-study has been built on the ability of the slow-motion picture to furnish the basic data. Training programs have been devoloped from the analysis of the performance of skilled workers. In many large industries the value of the evidential film is such that the company employs a competent photographic staff and maintains a completely equipped laboratory in order to study and to improve techniques and processes.

The above illustrations of the application of the evidential film in education, science and industry are by no means exhaustive. Examples could be cited from studies made in child psychology, neurology, sociology, ordinance, medicine, and many other fields of human endeavor. The evidential film has and will continue to make a large contribution to human knowledge. When the evidential film *in use* is shifted from a study or analytical purpose to a straight presentation-of-information objective, then it becomes another type of educational film which we will discuss next.

Factual. The fifth type is the *factual film* which treats a topic or series of topics in an encyclopaedic manner for the purpose of conveying information. The factual film differs from the discoursive film in that it is an episode or series of episodes rather than a systematic logical treatment of a topic or series of related topics. Newsreels and many of the travelogues may be classified as factual films. Evidential films, when used to inform, function as factual films. Freeman put his finger on the type as applied in the fields of anthropology and sociology when he stated that, "Its purpose is to reveal directly the customs and modes of life of people of various countries, climes or occupations. It differs from the dramatic picture in that it is not primarily based on a narrative or story." (4: P. 344). The catalogues of educational films from that of George Kleine to the present have

been filled with the titles of factual films. Let us cite a few examples. The first three are silent films produced by Eastman Teaching Films. The wording inside the brackets is the description of content: *Microscopic Animal Life* (photomicrographic views, amoeba, paramecium, stentor, vorticella, rotifer); *Alaska* (glaciers, gold, salmon, seals, whales, native life, American settlers); and *Digestion* (structures in digestive tract, functions, mouth, esophagus, stomach, intestines). The next two are sound films produced by Erpi: *Beach and Sea Animals* (starfish, sea-urchin, crab, cuttlefish, octopus, crayfish, lobster, shrimp, snail, scollop, and sea-cucumber. The physical structure, activities and interrelations of these animals are illustrated, special emphasis being placed on their methods of protection); and *Shelter* (various types of shelter; Eskimo igloos, African huts, Indian adobes, modern construction showing use of bricks, concrete, steel and glass. Living condition of today.) Like the discoursive type, factual films have been relatively dull. To many they characterize educational motion pictures because they have constituted a substantial majority of the films produced for classroom use. The chief value of the factual film is that it provides direct background information to assist in the study of a unit or topic. Factual films bring into the classroom experiences that could not be gained in any other way except by direct observation through expensive field trips and laboratory equipment.

Emulative. The sixth type is the *emulative film* which shows how to perform an act of skill or demonstrates patterns of behavior which the learner imitates. During the war this type of film was used to teach trainees how to manipulate apparatus and machines, and how to behave under combat conditions. It was especially helpful in training aeroplane pilots, gunners and technicians. Prior to the war the emulative film had been used to train learners in sports, in first aid, in child care, in industry and in many fields involving muscular coordination. Since the war a number of films of the emulative type have appeared. Some examples are: *Introductions,* and *Let's Give a Tea,* by Simmel-Meservey; *You and Your Friends* by Look Magazine in collaboration with Association Films; and *Play Ball, Son* produced by Bert Dunne. The so-called demonstration film in which a scientist demonstrates a difficult laboratory experiment for the purpose of informing students is not to be confused with the emulative type of film. Rather, it should be classified as a factual film or discoursive film depending upon the content or use.

Problematic. The seventh type is the *problematic film* which sets problems for discussion and supplies the basic data for thinking. The Commission on Human Relations of the Progressive Education Association produced a number of films of this type prior

to the war by extracting problem situations from dramatic feature pictures. During World War II the Armed Services used problematic type films with success. One in particular was employed by the Navy to screen pilots who were incapable of carrier duty. A good example of a problematic film which has been released since the war is *You and Your Family* produced by Look Magazine in collaboration with Association Films.

Incentive. The eighth type is the *incentive film* which motivates action in the direction of developing character, attitudes, morale, and emotional response. The so-called "documentary film" would come under this classification. Films which are made to propagandize and to promote sales are of this type also. Incentive films make use of all types of motion picture techniques to provoke the observer to action. The commentary, dialogue, sound effects and pictures generally move fast and are rhythmically combined to stir strong emotional response. In some incentive films the stark reality of the pictures themselves serve to achieve this purpose. Such a film is *Seeds of Destiny,* produced by the United States Army Signal Corps. It is the opinion of the author of this article that the term "documentary" film, mentioned previously, is misleading. Documentary means "the conveyance of information or evidence for the establishment of facts" according to Webster, and does not imply the arrangement of the evidence for the purpose of inciting. Strictly speaking a "documentary" film should be synonymous with a factual film. However, the "documentary" type, which has become popularly known as such, is in reality an incentive film. While the scenes of the documentary film are generally real life filmed on the spot without sets and actors, yet the angle of view, the editing and arrangement of scenes and the sound effects are all combined to establish attitudes and to arouse emotional response. For example, witness *The River* and *The City.* Likewise the March of Time films should, with few exceptions, be classed as incentive. The Armed Services made excellent use of incentive films during World War II to combat disease, to build morale, to change and develop attitudes and to create a better understanding of the war's purposes. The success with which incentive films were used during the war years has strong implications for civilian education, particularly at the adult level in teaching human relations and international understanding.

Rhythmic-Art Film. The ninth type is the *rhythmic-art film* which is used to achieve artistic effects and to develop aesthetic responses. For example, see *Fiddle-De-Dee* and *Begone Dull Care* distributed by International Film Bureau, Inc., and the National Film Board of Canada respectively. Other examples are Walt Disney's *Fantasia,* and *Anitra's Dance* which

was distributed by Gutlohn at one time. The rhythmic-art film is characterized by the use of moving patterns of color, light and shade, geometrical design and pictorial effects combined with music and other sounds. These films appeal to the rhythmical nature of the observer and to his aesthetic senses. Few rhythmic-art films have been produced. They may be regarded as being in the experimental stage.

An exposition of the rhythmic-art film and its place in the Avantgarde movement will be found in "Art in Cinema," published by the San Francisco Museum of Art in 1947. Henry Miller in his introduction to Art in Cinema expresses his feeling for the great adventures which lie ahead in the realm of rhythmic-art films by saying, "The experimental film, called such only because it dares to lie to the mirror, is not the ultimate in film art. It is only a tentative, faltering step in the direction of the unexplored. Thus far the medium of the film has scarcely been penetrated. It is still an uncharted ocean bounded by we know not what strange shores. Undoubtedly there exists a world, cinematic in texture and contour, as marvelous and inexhaustible as any known to the poet or mystic. It is a world which, once discovered, will alter the very atmosphere we breathe. Its cardinal element is fantasy. It manifests itself whenever the imagination liberates itself from the thralls of the intellect." Is it too much to predict that the emotional starvation which is to be found now in too many school environments will be replaced by the rich nourishment of emotional experiences which rhythmic-art films, yet to be created, will furnish?

Therapeutic. The tenth type is the *therapeutic film* which is used in medicine in connection with the educational rehabilitation of psycho-neurotic patients. These films employ some of the techniques used in the rhythmic-art type and are in the experimental stage. The Auroratone films are good examples. They employ abstract color patterns in ever changing crystal-like forms which are blended in synchronization with slow sedative and mildly sad music. Such combinations as "Home on the Range" sung by Bing Crosby accompanied by organ music, and "The Last Chord" played as an organ solo typify the music. It is reported that therapeutic films are being used with success. Rubin and Katz state, "A brief outline of the psychodynamics of the effect of these films on these patients suggests that the nature of the visual and auditory stimulation in these films appeals to the depressed mood levels of the patients. Repeated exposures to Auroratone films rendered them more accessible to positive psychotherapy." (17: P. 340).

One might question, "why include this type of film in a discourse on educational films?" The answer is, these films have been used in the educational rehabilitation of adults who are ill which suggests that films of this type could be used with value in schools for emotionally disturbed children.

Participative-Drill. The eleventh type is the *participative-drill film* which sets forth repetitive exercises in which the observer participates during the showing of the film. For example, the reading-drill films produced by Dearborn at Harvard University and the mechanical drawing films constructed by Rising at Purdue University are of the participative-drill type. *Let's Read Poetry,* recently produced by Paul Burnsford and distributed by Bailey Films, employs the participative-drill technique. Like the ninth and tenth types, drill films are in the experimental stage. It is to be hoped that more drill films will be produced in the near future, for there are many teaching situations in which they could be applied.

Participative-Enjoyment Film. A twelfth type may be designated as the *participative-enjoyment film* which is characterized by the films which have been made for group singing. This type differs from the drill film in that the learning is on an appreciative, rather than on an instructional level. Participative-enjoyment films have been used extensively with theater audiences but have not been employed in schools to an appreciable extent. Participative-enjoyment films could be used effectively in connection with auditorium programs and in other situations where united group activity is desired.

Devotional. The thirteenth type is the *devotional film* which has been developed for religious exercises in the church. In effect it is a filmed-devotional-period. An example is *Creation, According to Genesis.* Some films of this type are so constructed with music, hymns, text, sermon, prayers and visualizations that they constitute a complete church or chapel service. Devotional films have value for chapel exercises in church schools.

Contemplative. The fourteenth type may be designated as the *contemplative film.* Its purpose is to provide the environmental background for a period of quiet meditation or spiritual inspiration. Like the devotional film it has been developed chiefly for use in the church but has value for school assembly programs or similar exercises. In this type of film, music and visual sequences are combined. Generally there is no commentary. To be effective, contemplative films should be excellent in technical quality and create a restful mood. Hockman (7: P. 36) cites *This Is Our Earth* and *The Hills and the Sea* as examples of this type.

The following summary chart of the fourteen classifications has been prepared as a device to present the key ideas and characteristics in a form which may be used for quick reference:

Type	Key Idea	Chief Characteristic	Example
NARRATIVE	Tells a story	Flowing continuity in story form which presents a moral.	*The Hare and the Tortoise*
DRAMATIC	Theatrical presentation of drama, comedy, et cetera	Made for theater-for entertainment	*Tale of Two Cities*
DISCOURSIVE	Logical presentation of ideas or a process	Illustrated-Lecture	*Truck Farmer*
EVIDENTIAL	Records evidence for study and analysis	Use of film to gather evidence for study and analysis	*Gesell Child Study Films*
FACTUAL	Presents series of factual ideas	A series of factual episodes, Informational	*Alaska*
EMULATIVE	Presents actions or behavior to imitate	Presents model or pattern to imitate	*Dinner Party*
PROBLEMATIC	Presents problems	Raises questions but does not answer them	*You and Your Family*
INCENTIVE	Develops attitudes and morals, Propagandistic	"Sells" an idea or a point of view — strong appeal — motivating	*Seeds of Destiny*
RHYTHMIC-ART	Makes an emotional appeal aesthetic	Emphasizes active rhythm in sound, color, design, form and light, Abstract — fanciful	*Fiddle De Dee*
THERAPEUTIC	Arouses emotional responses	Strong emotional appeal through a combination of music and flowing color	*Auroratone Films*
PARTICPATIVE-DRILL	Presents repetitive exercises to be performed while film is running	Exercises are performed while film is projected	*Harvard Reading Films* and *Let's Read Poetry*
PARTICPATIVE-ENJOYMENT	Leads group in singing or similar activity	Voice, bouncing ball or other device used with music and visual music score	
DEVOTIONAL	Presents a worship service	Similar to a chapel or church service	*Creation According to Genesis*
CONTEMPLATIVE	Provides inspirational experiences.	Restful, inspirational combination of beautiful music and pictures	*This Is Our Earth*

Table 1.   Major Types of Educational Films

At this point one might properly raise two questions: Will numerous differentiations confuse the teacher? And, what are the practical advantages of an analytical study of types? The answers to the two questions go hand in hand. A lack of differentiation causes more confusion than it creates. It has been difficult always for teachers to determine the nature of films from catalogue descriptions. Published evaluations have failed to indicate classifications as to function which would guide the teacher. And it is common to find that theatrical-film-nomenclature has been carried over into descriptions of educational films, which adds to the confusion. If one were buying a passenger automobile he would not waste time considering a dump truck. Nor would he try on palm beach suits at the clothiers when he wanted to buy a wool garment for winter wear. In the realm of intellectual affairs, a teacher would not use poetry to teach students the essay nor would a textbook on chemistry be used as a tool in the study of the novel. A modern library could not operate without systems of classification. All human activities of an intellectual nature are characterized by systematic classifications.

The differentiation of educational films is essential to the development of clean-cut intelligent utilization. And it should be helpful in developing more effective production patterns. Clearly a typical incentive film should not be used as a drill film and vice versa. Nor should a factual film be used in teaching dramatic appreciation to a class in English literature. Likewise a producer would be foolish to produce a narrative type film when an emulative type is indicated.

The fourteen types of educational films here listed are offered as a working basis rather than something which is final. In the future it may be expected that there will be other types appearing and that there will be many sub-classifications based on use. Furthermore, there are and will be combinations of types which will make exact classification difficult unless the educational goals to be achieved in the use of a given film are known. For example, Julian Brayn's *Boundary Lines* combines the incentive and rhythmic-art types. I have found the word "drama" used in a catalogue to describe this film, a distinct misnomer. This discussion of the fourteen types of educational films indicates the broad extent to which the motion picture is being used effectively in education.

Unique Values of the Film in Teaching

What are the practical values of using motion pictures in education? The educational requirements of motion pictures are many. Likewise, the film lends itself to extensive variation in the manner in which it may be used in education. This point is brought into focus by the analysis of types in the preceding paragraphs. There are so many facets in a consideration of motion picture use that statements of values must be generalizations.

Raw film stock, like the paper employed in printing, may be used for many kinds of impressions. The limitations are only those of technical ability, equipment, imagination and ideas to express. The range of expression with film extends from the reproduction of the printed word to drama, from scientific records to fantasy, from the presentation of facts about objects to the complexities of human relations, from narrative to drill materials, from a presentation of the invisible to the facts of every day experience.

By means of the motion picture, the allegory of the race between the lazy hare and the persistent tortoise, enacted by live animals, comes to life on the screen. That same screen and projector can enable us to observe undersea life as though we were present in person. The screen and projector can enable us to experience the rhythmic-art fantasy of *Fiddle-De-Dee* or of *Fantasia*. Through the medium of the motion picture we can see and hear an illustrated lecture on soil. By means of animation we can take a ring-side seat and watch the movements of the earth and moon in relation to the sun, see for ourselves how an eclipse occurs, what causes the seasons and night and day. But why labor the point further. You know the scope of the experience that the motion picture and screen can present. Our problem is to consider ways and means of using the film effectively. However, let us first list some of its practical advantages.

Advantages of the Motion Picture as a Teaching Tool

1. *The motion picture has the power to communicate concepts involving motion.* The film has the unique advantage of depicting action or behavior with its illusion of life and reality. No other teaching device except the field trip can equal the motion picture in this respect.

The following analysis emphasizes the types of content suited to the presentation-of-motion function which the motion picture has the power to represent:

(a) First, the observable movement of objects, singly and in relation to each other, essential to a clear understanding and analysis. For example: the movements of parts of a machine, the movements of corpuscles in the blood stream, the movements of animals, the movement of a water wheel in producing power, et cetera.

(b) Second, the movement of objects too slow to be seen by an observer. For example: by means of time-lapse photography the motion of growing plants may be shown.

(c) Third, the movement of objects too fast to be analytically observed. For example: by means of slow-motion photography the swing of a golf club and the flight of a bullet may be seen.

(d) Fourth, the motion involved in depicting the relationship of objects and the flow of events separated by intervals of time and space. For example: the life cycle of insects, the movements of parts along an assembly line, the historical events leading to the Civil War, et cetera.

(e) Fifth, the motion of the unseen. For example: by using animated models and cartoons the motion of molecules can be depicted and the movement of elements inside the cylinder of an internal combustion gas engine may be seen.

(f) Sixth, the motion of the imaginary and of abstractions. For example: by means of animation Cinderella becomes a "living" personality. Graphs may be made to show movements.

(g) Seventh, the motion of rhythm depicted by varying intensity of sounds, music, lighting, shades of gray or color and by varying the movements of objects and the flow of pictures. For example: the beating heart in *The Tell Tale Heart* and the rhythm in *Begone Dull Care*.

(h) Eighth, the motion involved in the interaction and flow of ideas between people as expressed by words, gestures and other bodily movements. For example: the drama and the representation of human relationships.

In presenting this analysis I do not intend that it be all inclusive. Nor does it follow that an educational film would be based on only one kind of mo-

tion. The purpose is to call attention to and inform teachers of the basic *motion concepts* which may be shown by films.

2. *The motion picture has the power to communicate ideas in a realistic concrete manner not possessed by language.* Ideas presented by the motion picture have direct meaning. One way to demonstrate this point is to read a description of a technical process, such as the action of the claw mechanism in a motion picture machine, and discuss it. *Then show* a motion picture of the process. The difference in understanding is so markedly in favor of the film presentation that one does not need to elaborate on the power of the film to communicate technical ideas and processes.

3. *The motion picture may be used in connection with all types of learning.* Use of the film is not confined to presenting information or drama. The film may be used: (a) in the development of motor skills; (b) in the development of perception; (c) in building associations or memories; (d) in the development of understandings; (e) in solving problems; (f) in furnishing emotional experiences of educative value; (g) and in the development of attitudes, ideals and appreciations.

4. *The motion picture is a time saving educational tool.* Much has been said and written about the time-to-be-saved in teaching with films. The emphasis in thse pronouncements centers generally in the saving of class time or in the gains made in the acquisition of information. In practice, however, there is little evidence of a school using films to teach more in less time. Rather, where motion pictures have been used systematically in a course of study or unit the result has been to teach more in the *same* time. That is, the time-to-be-spent in the course has not been decreased. Inasmuch as the curriculum is overcrowded, teaching more in-the-same-time is a worthy consideration.

Perhaps the employment of the film to condense time and space is where the time saving advantage of the motion picture can be more easily demonstrated. For example, a life cycle or process which takes months to observe in nature can be shown on the screen in 10 minutes. Likewise a journey which takes weeks can be exhibited in 30 minutes. An experiment which takes days to perform can be demonstrated in 8 minutes, and with the assurance that it will "turn out" alright. A good 10 minute film may be as effective as a three hour field trip. Time saved in this manner is substantial.

5. *The motion picture may be used to facilitate the transfer of abstract concepts to concrete situations.* A student may memorize a generalization or principle but is often unable to transfer this "knowledge" to a practical situation involving the principle. The difficulty is that the student cannot "see" the relationships. Take, for example, teaching principles. Some students have difficulty visualizing the application of the concepts of self-activity, apperception, interest, individual differences, simultaneous learnings and the gestalt in classroom procedure. I show *Using the Classroom Film,* and stop it for discussion at each point where the application of one of the principles is clearly exemplified. *Film Tactics* illustrates the principle of apperception. *Willie and the Mouse* or *A Better Tomorrow* may be used to illustrate the concept of individual differences.

It is a function of the teacher to direct the student's attention to relationships in varying situations to facilitate transfer. The film is admirably suited to this purpose. And if the teacher has difficulty in securing one film to illustrate a principle, there are frequently others which do this thus relieving him of dependence on one film only.

6. *The motion picture has the power to present information and ideas which cannot be presented in any other way.* The film literally can bring the world to the learner. The grandeur of Niagara Falls, under water life, an erupting volcano, a journey to the moon, wild animals in their native habitat, an atomic explosion, the threshing of wheat, industrial processes, et cetera, can all be displayed on the screen in the classroom. It is obvious that the film can bring to instruction rare experiences which heretofore were confined to a few observers or to verbal descriptions of them. In addition, through animation techniques, the learner can see the movements of graphic materials, molecular action, the "flow" of electricity, and many other phenomena.

The film is an expensive audio-visual tool and for that reason should be used only when necessary (a) to show an activity, which no other pictorial aid can actually portray, and (b) to provide those experi-

ences which cannot be presented by any other teaching technique efficiently.

7. *The motion picture can be used to develop common apperceptive backgrounds of experience.* Perhaps one of the most important functions of the motion picture in teaching is to provide a class with a background of experience which is familiar to all. This facilitates meaningful expression, for all members of the class have something in common to discuss. The film is especially valuable in presenting a bird's-eye-view of a topic or unit by way of introduction. It is also desirable to use a film in preparing students for a field trip to orient observations and direct attention to important points. A film used to fill in gaps in experience may serve also as a spring board for reading, projects, dramatic expression and a variety of follow-up activities.

The motion picture is an excellent source of information *for a teacher* who wishes to review content before initiating a unit. (Provided, of course, that films are available which are related to the subject.) In other words, motion pictures serve as good resource materials for *teachers,* as well as for pupils, enabling them to check the accuracy of ideas and information as well as to supply background experiences.

8. *The film has proven its value to scientific workers by enabling them to record processes and analyze movements for detailed study.* For further elaboration of this point refer back to the discussion of the evidential film.

9. *The motion picture is effective in drives, social betterment campaigns, public relations programs and similar forms of propaganda.* For elaboration of this point refer back to discussion of the incentive-type film.

10. *The motion picture may be used instead of a textbook as the central theme of a unit.* There are enough films in certain school subjects, viz.: general science and geography, and in certain topical areas, for example, the westward movement and fractions, to enable a teacher to organize a teaching sequence based on a series of films. I have experimented with film-centered courses at the junior high school level in general science and at the college level (teacher education) in world geography. In both instances the collateral reading and activities centered in the film content. These experiments showed that carefully planned film-centered courses are practical, when the films are available, and that the students quickly adopt a study attitude toward the films. As more films of various types are produced, it will be possible to organize a wider variety of film-centered courses and to learn more about the special techniques involved.

11. *The motion picture as an art form may be used to develop aesthetic and emotional values.* This point is discussed in relation to the rhythmic-art type of film, to which the reader is referred.

LIMITATIONS IN THE USE OF MOTION PICTURES

1. Films and projection equipment are expensive.

2. The film with its speed projection must be stopped, slowed down, or shown many times, if real study and analysis of the content is desired. The temptation is to avoid repetition and depend on one projection of the film.

3. The moving picture in terms of many current forms of usage has a tendency to relegate the teacher into the background. Many teachers take advantage of this and use the "film period" as a time for relaxation.

4. There are not enough good films available at a reasonable cost which are adapted to all areas of the curriculum.

5. Motion pictures are perishable and do not stand wear as well as some of the other types of audio-visual materials. The operation of the equipment requires special training.

6. Teachers have difficulty securing films when they are most needed. Distribution is a complex process.

7. Films and projection equipment require systematic up-keep, care, and housing facilities.

8. Some students are conditioned, by seeing entertainment films at theaters or on television, to regard classroom films as "shows" or as inferior and not worthy of serious attention.

GENERAL SUGGESTIONS ON HOW TO UTILIZE FILMS IN CLASSROOM INSTRUCTION

1. Preview the film before attempting to use it. This is of prime importance. It is better to book the film a day or two in advance of use and take time to view it rather than take a chance on showing it "cold."

2. The motion picture should be an integral part of the frame-work of the lesson. If the "lesson" extends over a period of time, it is frequently desirable to book the film for several days in order that it be reviewed and "studied" as is any good textbook.

3. Do not show two or more unrelated films at the same class period. Do not show pictures just to be showing pictures.

There is a temptation to show films to fill time in a day or class period. Booking records in audio-visual centers show this to be true in too many instances. Regularly scheduled "film days" or "movie periods" tend to promote the mis-use of motion pictures in the classroom.

4. The organization of the complete teaching unit should be in the hands of the teacher. The motion picture should furnish the class with the raw materials of study.

5. Explanatory discussion during the showing of a *silent* film increases its effectiveness if the discussion or commentary is carefully prepared in advance. At times teachers find it desirable to turn off the commentary on a sound film and make the explanations themselves.

6. Encourage students to develop initiative and an intellectually active attitude toward motion pictures and discourage passive receptivity. This can be accomplished by the way in which the attention of students is directed by preparation and by the follow-up.

7. Teachers' study guides which are supplied with many films have value.

(a) They contain suggestion for effective presentation and use.

(b) The content of the film and grade placement are given.

(c) The guide will indicate the information the pupils should have prior to showing the film.

(d) Correlated reading and follow-up activities are suggested.

8. Show the film in an atmosphere which promotes learning. Avoid using the auditorium.

9. Determine the purposes to be achieved by using the film and the contribution which the film will make to the lesson or unit.

SPECIFIC TECHNIQUES FOR USING FILMS IN RELATION TO THE TYPES OF EDUCATIONAL MOTION PICTURES

1. The educative value of a film depends on the purpose which the teacher has in mind and the use made of the film to achieve that purpose. As objectives vary the techniques of use will vary. A simple film may serve many purposes. Teachers have been known to select a given film to accomplish as many as eight different objectives with it.

There are kinds of interpretation of motion pictures just as there are differentiations in extracting meaning from the various forms of written expression which one views on the printed page. We react one way to prose, another way to poetry. Reading a scientific discourse is different from reading a novel. The approach and reaction vary in each case.

2. Is there a standard formula for using an educational film? The answer is, no. For example, the preparation-presentation-follow-up pattern, which is frequently recommended as a desirable plan for *all* film usage in schools would, if rigidly employed, formalize that which should be variable. There are many circumstances in which a formal follow-up of

a narrative or dramatic or rhythmic-art or incentive film presentation would detract from its impact on the students. Likewise, a factual or discoursive film *may* be shown without specific preparation to a class which had been in disagreement over certain facts and information, so that the students may "see the answers" for themselves.

3. When a class is to be "prepared" for seeing a motion picture the nature of the preparation will vary with the kind of learning involved and the purpose for showing the film. In like manner the follow-up will vary. For example, in using an emulative film which demonstrates the forehand stroke in tennis, the teacher in one lesson may prepare the students by directing their attention to the over-all-pattern of the act. In another, attention may be directed to the footwork or to the backswing. The follow-up in the first lesson might consist of practicing the entire act, in the second the emphasis might be placed on footwork or on the backswing.

In using a dramatic film, the class may be guided to study the delineation of certain characters or attention may be directed to the plot. Or if a class has been studying a novel like "Tale of Two Cities," and the film based on the book is shown, the class could be prepared to compare the two versions.

4. Some of the techniques commonly employed to prepare students for viewing a film are: assigned collateral reading; discussion of the topics; listing points to be watched for; listing questions to be answered; pre-tests; and comments by the teacher for the purpose of directing attention.

5. Some of the techniques commonly employed to follow-up a film showing are: collateral reading; discussion; a test; organization of class or individual projects; dramatic play; imitating the behavior of the pictured experts or doing the how-to-do-it patterns shown; expression through writing, art or music; and solving problems.

6. The types of educational motion pictures which are most frequently shown more than once to a class are the factual, discoursive, emulative, participative-drill, and problematic types. Evidential films by nature are viewed many times. One of my graduate students found it necessary to view certain scenes 17 to 22 times to collect the data for his master's thesis.

7. The kinds of films which are generally shown without interruption are: the narrative; dramatic; discoursive; problematic; participative-drill; participative-enjoyment; rhythmic-art; therapeutic; incentive; devotional and contemplative types. In utilizing the evidential, factual and emulative types it is common to stop the film for discussion and review. If one of the other types is stopped frequently it means that

the film is being used as an evidential, factual or emulative film. If a teacher plans to stop a film during the presentation of it to discuss a scene, it is generally good pedagogy to show it through once and make the interruptions during subsequent showings.

However, if the film is to be used as a film-test, a preview of it is not indicated. Understandings of principles and generalizations may be effectively tested by showing a film which contains many examples of applications. The film is stopped after each example and the student is asked to indicate which principle the scene illustrates.
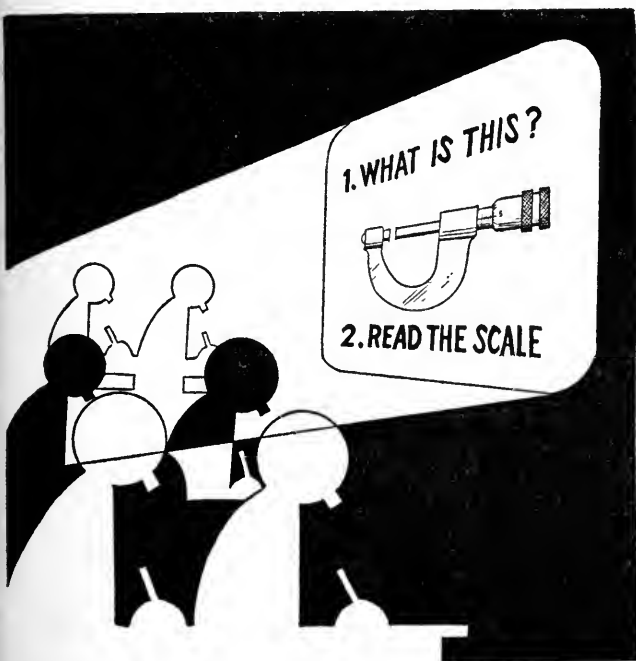
8. Many teachers criticize certain films for "covering too much." Such films are generally factual, discoursive, evidential or emulative in type. There is no rule to the effect that a film once started in the projector *must* be run through to the end. The teacher can show the portion of the film which applies to the lesson and ignore the rest of it. Later if other portions have application they may be shown as needed. In scheduling a film to be used in this manner it should be booked for several days or even for weeks.

There are many narrative and dramatic films which may be interrupted at a key point or just before the climax to turn the film into a problematic type. The students are asked to discuss the probable outcome or to write essays for the same purpose.

The previous statements as to the techniques of film utilization in education are not intended to be exhaustive in scope. Rather the intent is to stir the imagination of those who read this outline of pro-

cedures and to stimulate them to study the full scope of the educational motion picture.

ADVERTISING OR SPONSORED FILMS

The problem of the educational use of films which contain "advertising" has always been difficult. The best guide to the solution of this problem was published following a conference of 23 educators in Detroit, Michigan on April 4-6, 1946.[9] The evaluative criteria agreed upon follows:

A. To what degree do the objectives of the [film] harmonize with the educational objectives of the school?

B. Is the [film]: Accurate and authentic in fact? Representative in its selection of fact? Truthful and sincere in treatment?

C. Does the [film] present general understanding facts, processes or methods, or does it present a particular point of view or promote a specific brand?

D. To what extent is the [film] sound in terms of educational philosophy?

E. To what extent is the [film] significant in the sense that it promotes an educational program better than any other material generally available at the time?

F. Is the [film] adapted to the needs, interest, and the maturity level of the students who will use it?

G. To what extent is the sponsor's relationship to the [film] clearly known and acceptably stated?

CONCLUSION

Producers of films for use in education may find help in the analytical approach to their problems. I would like to see more films produced for specific pedagogical purposes such as the problematic, participative-drill, and rhythmic-art types. Some have said, why bother with types of films from the point of view of use? The answer it seems to me is obvious, different types of automobiles, of airplanes, of houses, of tools, of bridges, of ships, et cetera are built to meet the varying demands of human use. The appearance of types which make classifications possible is an expression of maturity in a given field of endeavor. Without systematic thought, the blind lead the blind.

BIBLIOGRAPHY

1. Edgar Dale, *Audio-Visual Methods in Teaching.* New York: The Dryden Press, 1946. Pp. xviii + 546.

2. William Exton, *Audio-Visual Aids to Instruction.* New York: McGraw-Hill Book Co., 1947. Pp. xiii + 344.

9. *A Suggested Policy with Regard to Sponsored Audio-Visual Materials Offered for School Use.* Detroit: Arthur C. Stenius, Wayne University, 1946.

3. George H. Fern and Eldon B. Robbins, *Teaching with Films.* Milwaukee: Bruce Publishing Co., 1946. Pp. 146.

4. Frank N. Freeman, "Requirements of Education with Reference to Motion Pictures." *The School Review.* Vol. XXXI, No. 5, May, 1923. Pp. 340-350.

5. Charles F. Hoban, Jr., *Movies That Teach.* New York: The Dryden Press, 1946. Pp. xiii + 189.

6. Charles F. Hoban, Charles F. Hoban, Jr., and S. B. Zisman, *Visualizing the Curriculum.* New York: The Cordon Co., 1937. Pp. VII + 304. (Now distributed by the Dryden Press.)

7. William S. Hockman, *Projected Visual Aids in the Church.* Boston: The Pilgrim Press, 1947. Pp. vii + 214.

8. A. P. Hollis, *Visual Education Departments in Educational Institutions.* Washington, D. C.: Government Printing Office, 1944. Pp. 36. U. S. Bureau of Education Bulletin, 1924, No. 8.

9. A. P. Hollis, *Motion Pictures for Instruction.* New York: The Century Co., 1926. Pp. vii + 450.

10. George Kleine, *Catalogue of Educational Motion Pictures.* New York: George Kleine, 1910. Pp. 336.

11. James S. Kinder, *Audio-Visual Materials and Techniques.* New York: American Book Co., 1950. Pp. 624.

12. Kenneth V. Lottick, "Film Classification in a Laboratory Course." *Audio-Visual Guide.* Vol. XVI, No. 5, Jan., 1950. Pp. 17-19.

13. Mark A. May, *Motion Pictures for Postwar Education.* Washington: American Council on Education Studies, Reports of Committees and Conferences. Vol. VIII, No. 21. Oct., 1944. Pp. 25.

14. F. Dean McClusky, "The Nature of the Educational Film," in Godfrey Elliott (ed), *Film and Education.* New York: Philosophical Library. 1948. Pp. 21-37.

15. Harry C. McKown and Alvin B. Roberts, *Audio-Visual Aids to Instruction.* New York: McGraw-Hill Book Co., 1940. Pp. xiv + 385.

16. Lyne S. Metcalf and H. G. Christensen, *How to Use Talking Pictures in Business.* New York: Harper and Brothers, 1938. Pp. xiv + 246.

17. Herbert E. Rubin and Elias Katz. "Auroratone Films for the Treatment of Psychotic Depressions in an Army General Hospital." *Journal of Clinical Psychology.* Vol. II, No. 4. Oct., 1946. Pp. 330-340.

18. George A. Skinner, "A Business Man Looks at Visual Education." *Education.* Vol. LIII, No. 6, Feb., 1933. Pp. 324-328.

19. L. Harry Strauss and J. R. Kidd. *Look, Listen and Learn.* New York: Association Press, 1948. Pp. x + 235.   ✪ ✪ ✪

N. OPAQUE PROJECTION

The possibility of teaching with the object is limited; for the object or phenomenon is not always obtainable and the school schedule will not always admit of a trip outside. On the other hand the field of pictures is almost unlimited. The teacher of geography cannot take her pupils around the world but she can achieve a good substitute through pictures.

A Neglected Phase of Visual Education

By G. H. BRETNALL

Someone has said: "If you do not know how to see, it is better to go to Burton Holmes travelogues than to travel. For he will show you how to see, and enable you to see many things you would never see for yourself." In nature study, for example, the teacher should take the children to field, stream and forest, but because of the schedule under which most teachers work the possibilities are limited. She can, however, bring a large amount of animal and plant material into the school room, especially in favored localities. For all material unobtainable by direct methods, pictures must be the great substitute.

It is easier for the teacher to depend upon description than go to the trouble—and the trouble is not a little—to get illustrative material. Probably most teachers are negligent along this line, do not use enough illustrative material, and continually talk about a host of things which they never illustrate and which the students therefore fail to understand.

The difficulty in the case of most teachers, grade, high school, and even college, is the obtaining of sufficient illustrative material. One of the most productive sources has been lantern slides and there are a host of slides to choose from. However, each teacher has his or her distinctive methods and manner of teaching. This variation is due primarily to two factors—first, the teacher's individuality, and second, the differences in the pupils whom she teaches. If a teacher is a real teacher and not an automaton she will fit her teaching to those whom she teaches. This will depend on the location of the school, whether city, town or rural, on the industries of the community and on the social classes from which the children come. Such diversity in teachers and conditions make it not easy to find lantern slides to fit the need. Again lantern slides are expensive, especially the colored ones, and officials seldom buy all that are needed. This is largely from lack of funds though sometimes it is from lack of appreciation of values. Some institutions make their own slides as desired, and such are fortunate; but for most schools lantern slides are inadequate from an expense standpoint.

Because of the difficulty in obtaining lantern slides the stereopticon side of teaching is neglected. But if the method of opaque projection is used, the difficulty is removed. With opaque projection almost any kind of picture can be shown. The light is thrown on to a common printed picture or actual object, and the image is reflected by mirrors through the lens of the stereopticon and on to the screen. Since the light does not need to go through the picture, as in a lantern slide it matters not what kind of picture is used—postcards, prints, even book illustrations. A colored picture goes upon the screen with all its color values, at no extra cost, whereas the cost of colored slides may be prohibitive. The machines vary but most of them show a picture six inches by six inches.[1] If it is desired to use a larger picture it may be moved around and different parts of it explained in turn.

These opaque reflectors are made by the leading stereopticon firms. Good ones are not cheap but they last a long time. The opaque method of projection is used limitedly. This is sometimes due to the fact that the machines used are really toys and not classroom apparatus. Sometimes good apparatus already in the school is not understood or appreciated. Opaque projectors in the schools are comparatively few. Often there is but one machine to a building and all the classrooms are not fitted for its use, so that getting the machine and room ready or the transferring of the class to another room would take all the time available for the exercise which is planned. Our purpose is to emphasize the universal adaptability of this method of instruction and the wide and extensive use to which it can be put. Thus used it will increase immensely the efficiency of the instruction and create an immense increase of interest on the part of the pupils.

Objection is often made to opaque projection that the pictures lack strength and clearness. Of course, nothing can equal good lantern slides for projected pictures, and you get along with less darkening of the room when lantern slides are used. But you can get good, clear, well focussed pictures with opaque projection if the apparatus is rightly used. The cost of effective means for adequate darkening of the room is very soon offset by the abundance of material available without cost by opaque projection.

The available material for opaque projection is almost unlimited. So many kinds of pictures or even things can be used. Maps and illustrations from the text books can be utilized and the recitation can be carried on from the screen. Children can be encouraged to bring pictures illustrating their school work and they thus have double interest when their own pictures are thrown upon the screen. Pic-

tures from books and magazines present a vast and varied amount of material. The book or the magazine can be put directly into the machine—it is not necessary to tear out the pages. Thus borrowed material can be used. Then, too, excellent pictures of usable size can be purchased for a very few cents each and there is a vast number of these available, both colored and uncolored.

The amount of material in the form of pictures and objects for opaque projection is so many times greater than that available for other kinds of projection that it far transcends them in importance. Properly used, opaque projection can be made a major part of visual work in schools.

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Expense is an important factor for any school to consider in setting up a real visual aids program, and it is perhaps one of the most common reasons given by school officials for failure to initiate such a program. Such reasoning may be sound if one considers that all types of audio-visual machines and equipment are necessary for a successful visual aids program. But, fortunately, this is not necessarily true. It is within the easy reach of any school, no matter how small, to initiate the program at only a small preliminary cost and very little added expense for operation. Pictures of all types and sizes are available today at little or no expense. This material alone could furnish the nucleus for an excellent visual aids program. However, for a comparatively small initial outlay, one hundred and fifty to two hundred dollars, an excellent projector can be obtained; and its use will greatly enhance the educational value of the pictures. This projector is the opaque machine; excellent ones are put out by a number of companies. This machine is easy to operate and has practically no part that can get out of order. In fact, it is so simple to operate that within a short time the older children will be operating it with the ease and dexterity of experienced hands.

It is true that some types of projectors cost less than does the opaque, but the actual cost of operating the opaque projector is only a fraction of that of other types. There is an almost unlimited range of materials. Wide-awake teachers will be constantly on the alert for pictures in magazines and books that can be used for working up a unit. Pictures can be

The Opaque Projector: Advantages and Handicaps

By E. F. IMILE

In, The Principal and Audio-Visual Education. Washington: The Department of Elementary School Principals of the National Education Association, 1948. Pp. 55-61.

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1. Since this article was written opaque projectors have been manufactured which show pictures 10 x 11 inches in size. (Editorial note.)

gathered at no expense from these sources and from companies that give away such material free of charge. If money is available for the purchase of materials, selections can be made from many different sources at only nominal cost. The printed page of almost any book can be projected. Leaves, flowers, insects, cross sections of plants, or even cross sections of trees may be projected in science units. The creative work of teacher and pupil may be used on the screen for all to study. Proper procedure in drawing may be demonstrated step by step with each stage of the development of the drawing a different picture. Almost any written work in the classroom can be used to further the audio-visual program. In short, the owner of the opaque projector is the master of the visual-aid field. There is practically nothing within the size range that cannot be projected.

A big advantage is that opaque projection lends itself so readily to discussion of projected materials while they are being shown. The picture may be left on the screen any length of time to permit thorough examination. It may be thrown on the screen and then a set of thought-provoking questions and statements may be shown. Then the picture may be again shown for further discussion.

Some teachers have feared that a visual aids program might make the teacher become more and more unnecessary to successful teaching. But just the opposite is true, especially in the case of opaque projection. Here the teacher is more than ever a leader and director of the activities of the students. She, or someone whom she appoints, must furnish or direct the "sound." Her guidance is a vital part of every discussion if the greatest good is to be derived from the materials presented. Weak teachers can improve their classroom techniques, and strong teachers can become even more skillful with the help of an opaque projector. It is possible to create a teacher-pupil relationship that is highly desirable. Gathering materials necessarily requires that teacher and pupil work together in order to review all possible sources. When once the materials are collected, there is still the task of assimilating them into units. During this process the pupil is learning while he is gatherng materials and while helping build the unit. Then he learns again when the completed unit is projected and discussed. The usual learning resulting from the individual work of each pupil is greatly enriched by the common experiences afforded the group. Perhaps the most valuable lessons the pupil learns in such a project are a real appreciation for the efforts of others and a sense of belonging because he has had a part in creating something original.

Opaque projection has a wide application at all levels of learning, but perhaps its greatest use comes in the primary grades. By projecting pages of books or pictures to the front of the room the attention of the children is focused there, and good work and social habits are a result of the discussion which follows. There comes naturally an enrichment in language and a development in the ability of the children to express themselves. From the simplest pictures a wide range of experiences may result. The children may find themselves playing imaginary games, climbing a mountain peak, or taking an auto trip. Pictures which show ways of making things or doing things help to develop their powers to think. Pictures with some object missing call for reasoning. Others, which are to be matched with words, soon lead the child to the place where he will enjoy trying to read. All these types of pictures are found in most work books and preprimers and are accessible to the individual child. But when they are projected on the screen they take on a new aspect; and the challenge to the child is greater. Much teaching can be done by the use of flash cards and flash strips in the projector. Throwing pictures and words on the screen makes it possible for the beginning reader to learn without taxing his vision by too much close work.

Opaque projection also can have a large place in giving the primary child a good foundation in arithmetic. Projecting pictures showing various quantities of familiar objects (i. e., two tops, four houses, three boys, one car) helps establish the fact that quantity pertains to all things and is not limited to a few well-known objects. Cards with dots on them help to build number sense. Dominoes may be used. Cards with numbers typed on them in correct order may be projected for class study. Then these same numbers typed in mixed order on another card may be shown for the children to point out.

The projector can be used in improving the handwriting of children. The correct letter forms may be shown to serve as examples for copying, or even tracing when thrown on the blackboard. Samples of handwriting on the screen show where improvement is called for and where achievement has been attained. Papers taken up several weeks apart may be shown for purposes of comparison and recognition of increased skill.

At the upper level of the primary grades it is possible to interest the children in free reading by projecting pages of books for the whole room to examine. After a short talk on the books presented, make them available to the children and watch the spirit of eagerness with which they attack them. These are just some of the ways in which the projector can be used to enrich the curriculum. The extent to which it can be used is almost unlimited.

It is in the upper elementary grades that opaque projection comes into its own as a cooperative under-

taking of teacher and pupil. While primary children may have a small part in helping to develop a projection unit, most of the work necessarily falls on the teacher. But in the upper grades pupil participation is greater while the teacher becomes more and more a director and coworker with the pupils.

The fields of history and geography lend themselves most naturally to opaque projection because of the many pictures available on those subjects. These pictures may be from books or magazines, or they may be parts of ready-made units procured from companies in that line of business. Work books will furnish maps, and special reports, and pupils' talks on current topics are made much more interesting if pictures to go with talks are shown. This working together in collecting materials, preparing reports, and in discussing the work gives the students excellent training, keeps up their interest, and gives the group a feeling of responsibility for learning.

In elementary science any number of units may be worked up for projection. Illustrated units on such things as harmful insects, helpful insects, birds, erosion, water fish, and weather are only some of the many that may be prepared by the class.

In language arts short reading selections may be thrown on the screen for reading by the group. A set of questions for the particular selection may be used next for the class to answer or discuss. As on the primary level, free reading may be encouraged by using choice pages of the books to interest the children. Such procedure is one of the surest ways to arouse curiosity concerning books. Proper use of the dictionary can be taught by reflecting its pages on the screen for giving directions in the study of definitions, pronunciation marks, etc. Pages from language work books or text may be shown for class study and explanation. This saves time in that no writing on the part of the teacher is necessary. One could go on at length about the many ways that all subjects of the curriculum can be improved and enriched with visual-aid materials, but the citing of these examples is for the purpose of provoking the user to branch out into many original applications of the same principle.

It is rather difficult to find fault with a thing that one is thoroughly sold on. However, there are some factors pertaining to opaque projection that might be considered as handicaps, and a fair discussion involves the examination of these problems. Many of these handicaps can be interpreted as advantages, depending upon the angle from which they are viewed.

Beyond a doubt opaque projection has a big disadvantage in that it lacks movement or motion. Motion has a very definite teaching appeal because it is only natural for anyone to be more interested in pictures that seem alive. With movement it is possible to hold the attention of children for quite a length of time, while without it, interest lags.

In carrying out a successful visual-aids program, much time, effort, and thought must be spent in gathering materials and developing the units. Other types of projection, with the possible exception of the slide projector, require ready-made materials. But education is at its best when thought is provoked for both teacher and pupil and when both work together in the learning process. When we learn through doing, we retain more than we would otherwise.

Some difficulty may be found in securing pictures of the right size. Many that one will want to use may be much too large and occasionally too small. Sometimes the large picture can be trimmed down to the right size, but it is often better to retain the whole picture and show it in sections. Again it may be better to get a substitute picture in the size that is more usable. The picture that is too small can still be used, but much of its effectiveness is lost.

The materials used in opaque projection can be quite a problem when it comes to taking care of them. They are bulky and require quite a bit of space, and they should be filed and catalogued. If this is to be done properly, someone should be in charge of them. In larger schools the school librarian is the logical one for this task. In smaller schools which have no full-time librarian they may be taken care of in the principal's office. In either case, these materials must be made available to all teachers regardless of who gathered them. Filing these materials is much more difficult than filing films, filmstrips, or slides; but a system using letter files and manila envelopes can be worked out satisfactorily.

Since the success of opaque projection depends to a large degree upon the teacher, there is the possibility that the program will fail because of the teacher not doing her part. The teacher might be satisfied simply to project a disarrangement of pictures and objects without having taken the time and effort to organize them into a unit. In this case, since objectives are absent, the value will be almost entirely lost. When this happens, it is the teacher who is really the handicap; and under no conditions should opaque projection be blamed. But such failures can often be prevented if the supervisor, either the principal or director of visual education, is on the job. A visual education program will not succeed if left too much to the teachers. It must be urged upon them; and they should be encouraged with suggestions, helps, materials, and much praise for efforts and accomplishments.

The absence of sound might be considered a handicap, but again it depends upon what one desires

in the program. Sound might help explain a picture, but it certainly cannot take the place of teacher-pupil discussion while the picture or object is shown. Explanations given by pupils when showing units that they have prepared themselves give them training in oral expression. Really then, the absence of sound might be considered an asset rather than a handicap.

Many schools, especially those that cannot afford more than one type of projector, would much rather purchase a movie machine. The reason for this is that they want the machine for entertainment as well as for a teaching aid. The opaque machine does not lend itself to this type of work since entertainment is not its primary purpose. Here again, the real handicap lies not in opaque projection but in the fact that finances are not available to some schools so that they may choose entirely on the basis of teaching values.

The problem of the "dark room" is one of the greatest handicaps to any type of projection. If the space is available, it is advisable to have a room especially equipped for projection purposes. This assumes that the room can be darkened, that it is well ventilated, and that it contains all the visual helps possible. But in a large plant there is always the problem of making this room available for any group that may happen to need it. This is often impossible, and it is not always desirable to move the class to another room. Take a primary grade, for example. Certainly it would be out of the question to take such a grade to the projection room every day to teach them. It would be much better to be able to darken the primary room when the need arose. But if this is done, the problem of ventilation will arise, especially if there are many children in the room. Of course, there are the various types of projection boxes which can be used in the undarkened room. These are ideal if the room is not crowded, but in the full room they take up too much space. The best solution seems to be to darken the classroom for opaque projection and have movies in the regular projection room. If the classroom is darkened for just short periods of time, the ventilation problem will not be serious. For each school the problem will have to be solved on the basis of building plans and available equipment.

Compared with other types of projection there is nothing glamorous about opaque projection. It is the "country cousin," so to speak, of movie projection. It goes quietly about its business without any sound and motion, so much so that I am afraid that far too many of us have failed to give proper recognition to its worth. Just as we too often fail to notice the quiet, unassuming child in the classroom and give him credit for having no more than average intelligence while spending our time and efforts on the

more brilliant student, so we tend to relegate opaque projection to the background. But after all is said and done I am wondering if opaque projection is not the core of our audio-visual program, just as the average child becomes the mainstay of our cultural, social, and economic life. Certainly opaque projection has more of the common touch than does any other type. If this be true, then it should be used to a greater degree than any other type. As stated before, there is nothing exciting about opaque projection. Its methods seem slow and cumbersome when compared to other types. But when one considers the fact that most of its materials must be accumulated by teacher and pupil working together and that learning is certainly going on during that process, we come to the conclusion that it is the type of projection that most nearly meets the ideals set up for education for democratic living.

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O. RADIO

Radio has become such an important part of our every-day American life that it is hard to realize that the broadcasting industry is little more than thirty years of age — if we accept the traditional date for its beginning, the KDKA broadcast of the Harding-Cox election returns on November 2, 1920.

Radio Education in Historical Perspective

By
BOYD E. LINDOP

In, Boyd E. Lindop, "The University and Radio Education: Opportunities and Their Acceptance." Los Angeles: The University of California. Unpublished Doctoral Dissertation, 1953. Pp. 31-49.

We can all remember cumbersome early sets with their large horns or ear phones, and recognize the great progress in radio reception. It is more difficult to realize that the first network broadcast was as recent as 1926. On November 15, 1926, to be exact, the newly-formed National Broadcasting Company — organized by Radio Corporation of America, General Electric and Westinghouse, and American Telephone and Telegraph — presented a program featuring, among others, Walter Damrosch and the New York Symphony, Weber and Fields, Will Rogers, and the Goldman Band. The program went out over a small group of stations, little resembling the giant networks of today in number, power, or equipment and facilities for broadcasting.

EDUCATIONAL INTEREST

Education and educators were in on the "ground floor" in development of radio. In 1896, only one year after Marconi published his experiments, wireless research was being conducted at Tulane Uni-

versity, New Orleans.[1] Physics and engineering departments of many other colleges and universities quickly followed conducting experiments with the new "toy" called wireless, and broadcasting code first, and later voice and music. Atkinson[2] reports that "at least three state universities (Wisconsin, Minnesota, and North Dakota)" had successfully broadcast "both music and voice" prior to November, 1920.

In the early 1920's the Department of Commerce, under Secretary Hoover, was forced, by the increasing number of stations, and their increasing power and interference with each other, to call a series of conferences and adopt a system of licensing. Education "jumped on the radio bandwagon" with enthusiasm. One educational station was licensed in 1921, and seventy-three broadcast licenses were issued to such stations in 1922. This was the peak year, but thirty-nine educational licenses were issued in 1923, thirty-eight in 1924, and twenty-five in 1925.[3]

During these pioneer years no one knew what radio could do, and many educators made wild claims about the new medium. Radio was regarded as a sort of sovereign remedy for all educational ills; it would educate the general public so efficiently, it was thought, that institutions of higher learning would soon have no purpose or meaning.

Radio would broadcast to every classroom, from kindergarten through graduate school, and do a much more efficient job than the regular teacher. Before long many teachers could be eliminated, and training — for adults or youngsters — directed entirely by radio. As Atkinson phrases it in *Development of Radio Education Policies in American Public School Systems*:

"American educators' . . . early enthusiasm then saw no limits to what radio might be able to do to and for American youth. In theory, radio was about to revolutionize the American educational process, teachers were to be eliminated as a saving to taxpayers, and boys and girls were to receive magic words of wisdom from little radio boxes and thus in a previously undreamed of efficient manner be better able to meet life's serious problem."[4]

It is easy, now, to see that these expectations were so exaggerated as to become ridiculous. And yet, interestingly enough, some of the same claims are now being advanced for television, and may possibly have the same effect in developing, among teachers, unfortunate fears and suspicions which will stifle classroom use of a valuable tool.[5] Neither radio, television, nor any other aid is alpha or omega in education. There is no royal road to knowledge. It is easy to see these facts for radio now, but it is always easy to be wise after the event — though perhaps not so easy to transfer old lessons to newer fields as we had thought.

Many educators, with starry-eyed expectations for radio, hurried into broadcasting before they or their schools were really ready to enter the field. The majority began radio work without training or experience, and with the added handicaps of little or no planning and consideration, and very limited budgets. Successful educational radio was almost impossible, with these handicaps, and with competition from well-financed commercial stations with expertly designed and produced entertainment programs.

Radio Education Loses a Battle

With the breakdown of radio regulation in 1926, and the advent of the Federal Radio Commission in 1927, increasingly strict requirements for technical equipment to render better broadcasting service made it difficult for some of the universities to continue broadcast operations on the limited budgets allotted them. This became an even greater problem when the depression cut deeply into all expenditures. In addition, other universities found it impossible to meet the expense of hearings in Washington when their frequencies were sought by commercial stations on the basis of better ability to serve the public.

Relations between educators and commercial radio men during this period were strained, at best. The National Committee on Education by Radio, organized in December, 1930, gave militant support to the Fess Bill, which provided that fifteen per cent of available radio facilities should be set aside for educational purposes. Joy Elmer Morgan, of the N.E.A. was chairman of the committee, which represented many groups either involved with or interested in radio education, and joined in opposition to commercial radio interests.

The files of *Education by Radio*[6] give evidence of the battle between education and commerce, and

1. S. E. Frost, Jr. *Education's Own Stations.* Chicago: University of Chicago Press, 1937. P. 433.
2. Carroll Atkinson. *Radio Extension Courses Broadcast for Credit.* Boston: Meador Publishing Company, 1941. P. 12.
3. S. E. Frost. *Op. cit.,* p. 4.
4. Carroll Atkinson. *Development of Radio Education Policies in American Public School Systems.* Edinboro, Pa.: Edinboro Educational Press, 1939.
5. See editorial "Such Claims Are Ridiculous!" in *Educational Screen,* Vol. 27, No. 1, January, 1948, page 10, for an example of what the editor rightly calls "the same loose and unenlightened talk all over again." Also, see article entitled "Under Comparable Conditions, TV Is Equal or Better Than Face-to-Face Classroom Contact of Teacher and Student," in February, 1951, *Radioways to Learning* (published by the Los Angeles City Schools, Audio-Visual Aids Section).
6. Published as a weekly or semi-monthly bulletin by the National Committee on Education by Radio between 1931 and 1935, and monthly or quarterly thereafter until publication ended in 1941.

the Committee's intention "to secure to the people the use of radio for educational purposes by protecting rights of educational broadcasters."[7] A service bureau to assist educational stations in securing licenses and in technical questions was formed. In this and other ways — such as encouraging research — the National Committee undoubtedly had a great deal of influence in improving American radio. Waller refers to its aid in keeping KOAC and other educational stations on the air, and credits it with "forcing a congressional study of broadcasting in general, which resulted in the appointment of a new body to replace the Federal Radio Commission."[8] This new body, the Federal Communications Commission, was created by Act of Congress in 1934.

In this same 1930 period the National Advisory Council on Radio in Education was formed, with support of the Rockefeller Foundation and Carnegie Corporation, and with Levering Tyson as director. The purpose of this group was "to mobilize the best educational thought of the country to devise, develop, and present suitable programs, to be brought into fruitful contact with the most appropriate facilities."[9] During its eight years of existence the Council, cooperating with some sixty other agencies, was responsible for broadcasting more than fifteen different series of radio programs in such diverse fields as history, government, medicine, law, economics, and labor.

Despite this work, and the launching of the Damrosch music program in 1928, the American School of the Air in 1930, and the University of Chicago Round Table in 1931, it must be admitted that educator-commercial radio cooperation was not much in evidence during the early years. Frost[10] shows that, while 202 broadcast licenses were granted to educational institutions between 1921 and 1936, 164 "were either permitted to expire, transferred to other interests, or revoked by the licensing authority." Thus, on January 1, 1937, only thirty-eight licenses were in educational hands. This number had dwindled, Waller reports, to a mere twenty-six by 1945.[11]

RADIO EDUCATION SUCCESSES

The picture is not as dark as it might appear, however. Many of these early losses of license were by stations which had held their permits for only a year or two. They represent the ending of experimental interest when the physicists and engineers were faced with the necessity of providing programs to fill several hours of broadcasting time.

In addition, the recent growth and development of Frequency Modulation (FM) education stations, and revival of interest in educational broadcasting since World War II, has greatly increased the number of educationally-owned outlets. A list compiled by the Federal Radio Education Committee and the U. S. Office of Education indicates that there are now a few more than 100 licensed AM or FM educational stations, 72 of them belonging to institutions of higher learning.[12]

As the years went on, also, it became clear that the commercial broadcasters were improving their programs, and cooperating to a greater degree with schools and educators. Wrightstone points to improvement in these words:

"In recent years, however, educational scripts have improved enormously, and the careful preparation for showmanship that increases popular appeal."[13]

Much of the credit, both for improved programs and better relations with commercial radio, should go to the Federal Radio Education Committee. This group, representing educational stations, educators, networks, commercial stations, and commercial stations owned by education, was organized by the Federal Communications Commission in 1935. Feeling that the program improvement and new spirit of cooperation was what it had been working for, and that the FREC would carry out its purposes, the National Committee on Education by Radio — during its early years the most vocal group in criticism of the commercial interests — put its affairs in order and disbanded in 1941.

Much radio work has also been done by colleges and universities using the facilities of local non-university stations. Such cooperative effort should not be overlooked in consideration of colleges and university efforts in radio education. Christiansen[14] both points to the considerable use of commercial radio facilities, and shows — in the data reproduced in Table I — that college and university interest in beginning radio programming activities has continued, with "the greatest increase in the beginning of programming activities . . . following World War II."

7. *Education by Radio*, I, Feb. 12, 1931, p. 1.
8. Judith Waller. *Radio the Fifth Estate*. Boston: Houghton Mifflin Company, 1946. P. 399.
9. *Listen and Learn*. New York: National Advisory Council on Radio in Education Information Series, Number 1, 1930. P. 4.
10. S. E. Frost. *Op. cit.*, p. 3.
11. Judith Waller. *Op. cit.*, p. 397.
12. U. S. Office on Education. *List of Standard and FM Educational Radio Broadcast Stations by State and City, as of September 12, 1949*. (Mimeographed).
13. J. Wayne Wrightstone. Articles on educaional radio in, Waler S. Monroe (ed.). *Encyclopedia of Educaional Research*. Rev. edn. New York: Macmillan, 1950. P. 959.
14. Kenneth A. Christiansen. *Organization and Administration of Radio Programming in Colleges and Universities*. Unpublished Doctoral Dissertation, University of Missouri, 1949. P. 35.

Table I[15]
RADIO PROGRAMMING ACTIVITY

Number of Four-Year Degree-Granting Institutions Beginning Radio Programming Activities During Each Four Year Period Since 1915.	
1915-1919	3
1920-1924	21
1925-1929	12
1930-1934	19
1935-1939	41
1940-1944	48
1945-1948	106

The educational radio picture is also brightened by the fact that educators can point to outstanding work done by Ohio State's WOSU, Wisconsin's WHA, Illinois' WILL, Iowa State's WOI, the University of Iowa's WSUI, Oregon State's KOAC, and many other college and university stations, from their first broadcasts.[16] "The Ohio School of the Air," for example, was first organized in 1929. "The Wisconsin School of the Air," originated by WHA, Purdue University's "School of the Air," and the "Minnesota School of the Air" on KUOM are among other in-school listening series of which radio educators may be proud. Many excellent programs for out-of-school and adult listening have also been produced.

Moreover, the names of many university radio leaders are both honored by American education and respected in radio circles. Ben H. Darrow, Tracy F. Tyler, W. W. Charters, Norman Woelfel, I. Keith Tyler, Waldo Abbot, Kenneth Bartlett, H. B. McCarty and Charles A. Siepmann are among other university radio educators with national reputations.

And finally, the Chicago, Cleveland, Detroit, New York and Oakland public schools, and State Departments of Education in Texas and Oregon, have also done outstanding radio work, indicating possibilities and limitations of the medium . . . Chicago has maintained that broadcasts should provide curriculum enrichment, and be used in varied and individual ways by each individual teacher. On the other hand, Cleveland's WBOE — under the direction of William Levenson, another radio leader — has a reputation, possibly unjustified, of leaning toward direct teaching by a master teacher.

UNIVERSITY COURSES BY RADIO

Formal university credit courses on the air, and courses in radio techniques, fluctuated much as did the fortunes of educational stations. As early as 1922, regular extension courses were being offered by radio from New York University, Columbia, and Tufts College.[17] In the same year, WHA, Wisconsin, began a regular series of music appreciation programs, under the direction of Dr. E. B. Gordon.[18]

In 1925 an organized "College of the Air," devoted to agriculture, began on WKAR, the Michigan State College Station.[19] Home economics, animal husbandry, veterinary medicine and horticulture were among typical courses offered. This program, apparently the first of its type, was only a little earlier in presentation, however, than the WEAO (WOSU) "Farm Night" program of the Ohio State University College of Agriculture. Also in 1925, Kansas State Agricultural College began a "College of the Air" with courses in psychology, sociology, community organization, English, literature, economics, journalism and vocational education.[20]

Oglethorpe University, Georgia, inaugurated a broadcast-course-for-credit project in June of 1931,[21] with a department of education by radio claiming "equal standing, dignity and order with the undergraduate and graduate Departments of the University."[22] The intent was to demonstrate that a full college education could be given by radio, but Oglethorpe was hardly a "strong" school to attempt a program no reputable college or university would consider possible today.

Commercial radio took up the challenge when WEVD launched a "University of the Air" in October, 1932, with such notables as John Dewey, Percy Grainger, Sigmund Spaeth and Lewis Gannett.[23] Training in the techniques of radio in commercially-sponsored "Institutes," has been a more noteworthy development.

Atkinson has recorded radio extension credit courses, showing that, from 1923 to 1941, thirteen schools embarked on such programs, but:

"The fact stands out, like a sore thumb on an otherwise immaculately manicured hand, that there was only one "credit" course offered via radio during the 1940-41 academic year, and it failed to attract a single enrollment."[24]

Atkinson maintains that lack of interest in the rather academic lectures, and failure to inspire listeners because of inability to combine showmanship and in-

15. Table after Christiansen, *op. cit.,* p. 33.
16. WHA was operating experimentally as early as 1917. The other stations named are also radio pioneers. The story of their operation is given in S. E. Frost's *Education's Own Stations,* in volumes by Atkinson, Shurick, White, and others, and in the files of *Education by Radio.*
17. Llewellyn White. *American Radio.* Chicago: University of Chicago Press, 1947. P. 101.
18. E. P. J. Shurick. *The First Quarter Century of American Broadcasting.* Kansas City: Midland Publishing Company, 1946. P. 66.
19. E. Shurick. *Op. cit.,* p. 287.
20. William Levenson. *Teaching Through Radio.* New York: Farrar and Rinehart, Inc., 1945. P. 32.
21. *Education by Radio,* Vol. I, No. 15 (May 21, 1931), p. 60.
22. S. E. Frost. *Op. cit.,* p. 266
23. E. Shurick. *Op. cit.,* p. 298.
24. C. Atkinson. *Radio Extension Courses Broadcast for Credit.* Boston: Meador Publishing, 1941. P. 12.

struction, were reasons for the failure of credit courses on the air.

Though not too successful, such broadcasts have not completely faded from the air. Instead they remain as one phase of educational broadcasting, though not as important a part of that activity as educational programs without formal credit.

EDUCATION IN RADIO TECHNIQUES

As for the beginnings of courses in radio speech and production techniques, KWSC and the State College of Washington at Pullman offered a radio speech class as early as February, 1929.[25] This was apparently the first such course in any college or university, but in the next year Ohio State University began a course in radio education, and inaugurated the Institute for Education by Radio in June.[26]

A radio advertising course was presented by the National Broadcasting Company and City College of New York in September, 1930.[27] This college has continued its interest in the business and advertising side of radio to the present, holding radio advertising conferences and presenting awards in station promotion and advertising.[28]

Further network and commercial cooperation was evidenced only a few years later when, in 1933, the Columbia Broadcasting System and New York University began some interesting experiments with a summer Radio Workshop.[29]

Kansas State courses in the program side of radio were available from February, 1932,[30] and the University of Wisconsin established a course in communications in this same year.[31] Other colleges and universities soon followed the lead in offering courses in educational radio, and radio programming and production technique. In fact, expansion was rapid as the depression years faded into the background. As Ben Darrow writes, summarizing the development:

"In 1937 the growth of radio courses offered by summer schools became rapid. For example, the first radio courses and radio conferences were held in the South at Southern Methodist University and the University of Texas. Each year in the last half of the 1930's has seen the addition of many colleges and universities until there are now more than a hundred giving such courses. Winter courses are not so numerous, but present a wider variety of instruction."[32]

In the Fall of 1938, Drake University, Des Moines, Iowa, began a series of eight radio courses, all offered in the liberal and fine arts fields in a close approach to a full radio major.[33] In 1939, New York University inaugurated a four-year course in radio, believed to be the first college or university course in this field leading to a degree.[34] The liberal arts emphasis

was combined with a heavy vocational major, radio taking one-quarter of the units.

June of 1942 saw the beginning of the NBC Summer Radio Institutes at Northwestern University, followed in the next year by similar courses at Stanford University, the University of California at Los Angeles, and the University of Texas.[35] Network resources were freely and extensively used by students of these Radio Institutes. Instructed by network radio personnel, the courses were an excellent example of commercial-educational cooperation, prompted possibly by network need for new employees in World War II years.

Another example of cooperation occurred in 1943 when station WMAZ, Macon, Georgia, took its prize money from the A. I. Du Pont award and equipped the radio class at Wesleyan College with a broadcasting studio and control room.[36]

Radio institutes or workshops for teachers have been held by many commercial stations. Among others which might be listed are KYW, which works in cooperation with the University of Pennsylvania and the Philadelphia Public Schools; KOIN, Portland; the McClatchy stations in California; and KMBC, in cooperation with the University of Kansas and Kansas City Schools.

Radio news departments and educators working in the field of journalism came into closer relationship in 1945. In that year the Council on Radio Journalism, established by the National Association of Broadcasters' Radio News Committee and the American Association of Schools and Departments of Journalism, made it possible for instructors from nine universities and colleges to "intern" at qualified radio stations during the Summer months.[37] Having proved its value, the program has been continued.

The cooperation aspect developing in the more recent training is gratifying, especially when one remembers the early commercial-educational rivalry.

25. E. Shurick. *Op. cit.*, p. 305.
26. Ben H. Darrow. *Radio the Assistant Teacher*. Columbus, Ohio: R. G. Adams and Company, 1932. P. 57.
27. E. Shurick. *Op. cit.*, p. 134
28. Sol Taishoff (ed.), *Broadcasting Telecasting Yearbook Number, 1950* (Washington, D. C.: Broadcasting Publications, Inc., 1950), lists City College awards on page 529.
29. Jennie W. Callahan. *Radio Workshop for Children*. New York: McGraw-Hill Book Company, Inc., 1948. P. 319.
30. H. B. Summer (ed.). *Radio Censorship*. The Reference Shelf, Vol. 12, No. 10. New York: H. W. Wilson Company, 1939. P. 192.
31. *Education by Radio*, II, 3 (Jan. 21, 1932), p. 10.
32. Ben H. Darrow. "Classroom Radio: Its Origin, Present Status, and Probable Future," in Max Herzberg's *Radio and English Teaching*. New York: D. Appleton-Century Company, 1941. P. 73.
33. *Education by Radio*, Vol. VIII, No. 6 (July, 1938).
34. *Education by Radio*, Vol. IX, No. 5 (May, 1939), p. 17.
35. Judith Waller. *Op. cit.*, p. IX.
36. E. Shurick. *Op. cit.*, p. 307.
37. E. Shurick. *Op. cit.*, p. 134.

Other examples of college and university training in and by radio might be mentioned and discussed. The above summary and discussion, however, has accomplished its purpose in indicating some of the chief "landmarks" in radio education, and the historical pattern of development.

○ ○ ○

Radio is a tool for the classroom teacher. As a tool, the teacher must learn to use radio as she has learned to use films, slides and records.

Notes on Classroom Utilization of Radio

By
ROBERTA FREUND
Education, Vol. 67, No. 9.
May, 1947. Pp. 558-559.

There are almost as many ways to use radio in the classroom as there are teachers using it. During the month of October, 1945, an experiment in the utilization of radio took place in the Newark schools. Selected teachers (Kindergarten — 4th year high school) in a group of schools experimented in using radio broadcasts from the commercial stations. Thirteen different ways in which radio was used were reported:—

I. Pure enjoyment.
II. Enrichment material.
III. Direct Instruction.
IV. Inspiration.
V. Stimulant for oral and written composition.
VI. Revelation of character traits and opinion.
VII. Introduction to other media of communication — books, visual materials.
VIII. Source of information.
IX. Means of increasing vocabulary.
X. Model for clear, incisive speech.
XI. Tool for music appreciation.
XII. Suggestion for physical response to rhythm.
XIII. A novel way of teaching.

The intelligent use of radio means participation. Good radio writing provides for audience participation during the broadcast through the mind or imagination. Good utilization provides for audience participation before and after the broadcast. Here is a simple, broad outline for classroom utilization of radio programs. Of course, all these activities need not be carried on for each broadcast.

THE PREPARATION PERIOD

1. Motivation.
2. Explanation of broadcast.
3. Discussion on subject of broadcast.
4. Preparation by the class of a list of things for which to listen.

5. Exhibition of visual materials pertaining to subject of the broadcast.
6. Display of books, objects, etc., pertaining to the broadcast.
7. Preparation of room.
a. Place "Do not disturb" sign on classroom door.
b. Have radio tuned properly before broadcast time.
c. Arrange seating of class so all can hear and are comfortable.

THE LISTENING PERIOD

1. Active listening.
a. Note taking.
b. Lists of new words.
c. Checking answers to questions formulated during preparation period.
Note: Be sure all necessary instructions are given for these activities before the broadcast starts.
2. Passive listening.
3. Use of visual materials during the broadcast.
a. Teacher or student show slides or pictures during the broadcast.
b. Teacher or student use large map during broadcast.

THE FOLLOW-UP PERIOD

1. Discuss broadcast as a whole.
2. Answer questions formulated during pre-broadcast period.
3. Debate on subject of broadcast or point made in broadcast.
4. Correlate program content with art, music, dancing, writing.
Note: All radio programs need and welcome comments and suggestions from listeners. Encourage the writing of post cards and letters to both your school and commercial stations.
5. Check and expand facts set forth in the broadcast.
6. Check on increase of vocabulary.
7. Point out the correct pronunciation of proper nouns and unusual words.
8. Encourage the writing of scripts.
9. Encourage research on points of interest treated briefly in broadcast.
10. Evaluate broadcast, considering such points as: music, dialogue, sound, vocabulary, speech, etc.
11. Use visual materials — films, filmslides, etc. — to illustrate places and people in the broadcast.
12. Play records and recordings on the same subject as the broadcast.
Note: Complete music records of numbers used in broadcast and also of same type of music may be played.
13. Encourage book reports on the subject of the broadcast. ○ ○ ○

P. RECORDS AND RECORDINGS

The growth of the multisensory techniques in the applications of audio-visual aids by the classroom teacher has progressed by leaps and bounds since the end of the war. Administrators, teachers, pupils, and lay members of the community have come to accept these techniques as a respected phase of education. Thanks to the educational efforts of forward-looking members of our own profession and the publicizing activities of manufacturers and dealers, the amount of usable equipment and material available to the classroom teacher has increased tremendously.

Exploring the Audio in Audio-Visual Education

By
SAM S. BLANC
Audio-Visual Guide, Vol. 15, No. 4, Dec., 1948. Pp. 5, 7-8.

Yet, by and large, when one speaks of audio-visual aids in the classroom, the image which is conjured up in the minds of most listeners is that of a darkened room with the attention of the class focused intently on a brilliantly projected image from a film or a slide on the screen. The importance of the visual is not to be underestimated. For pure, concentrated attention by any group, an illuminated screen in a darkened room cannot be equaled. But we must not overlook the many varied possibilities of teaching in the classroom with the emphasis on the audio phase of education.

Three aspects of audio instruction will be considered in this paper. First our discussion will deal with the equipment and techniques for using recordings made in the classroom by the student and the teacher. Second, we shall point out the possibilities of using prepared recordings and transcriptions to enrich the activities of the class. Third, we shall consider how the radio may be used by the classroom teacher.

Two major types of recording equipment have been developed successfully for classroom use to date. First, there is available the recording using a plastic-coated paper, glass, or aluminum disc, or a plastic tape, on which the needle or stylus in the recorder arm engraves or embosses a continuous groove. This is similar to the common phonograph record with which everyone is familiar. Upon completion of the recording process the disc may be played back on the same machine, using the playback arm. If we are thinking of the more commonly used record disc, it may also be played back on any other machine on which the turntable revolves at the same number of revolutions per minute (r.p.m.) as the original recorder. Recordings have been standardized at 78 r.p.m., which is the rate at which the home phonograph plays, and at 33⅓ r.p.m., which is the rate at which radio transcriptions operate. Almost all disc recorders available to the schools may be operated so as to record or to play back at either of these two speeds.

The desirability of this type of equipment is not well established. The cost of the discs is small, ranging from ten cents for the small paper disc to slightly over a dollar for the large aluminum disc. These discs lend themselves to easy labeling, filing, and storing. Short talks or musical selections may be transcribed on the discs and studied by the student and the class repeatedly for purposes of analysis and improvement. Furthermore, if the student has a phonograph or playback at home, the disc may be played there to help him with his work. Parents are glad to hear what their children are accomplishing in school. A series of discs may be made by a group and filed for reference at a later date to show a "before-and-after" comparison of the activity being carried on. For such comparisons, discs are advantageous, for on a disc it is easy to locate and replay only a part of a recording—the part of educational significance.

PROBLEMS IN USING DISCS

Several disadvantages, however, are also present. The discs are expendable. Once used, they cannot be used again. The length of the recording on one side of the disc cannot exceed 20 minutes. Like any other engraved recording there is a small amount of needle noise in playing the record back. Disc-type records are susceptible to damage from handling. Engraved recordings cannot be erased. An error necessitates starting over again, and this means lost time, wasted effort, and a useless disc. The equipment developed to date is rather bulky. The machines used in our school have given us considerable difficulty in that the needle of the playback arm breaks frequently. This is probably caused by rough handling of the machine in moving it from room to room. Since the needle is an integral unit of the playback arm, a damaged needle necessitates taking the machine out of use until repairs are made.

The second type of recorder is the magnetic recorder. This had originally been developed in principle at the turn of the century, but only recently has it been adapted for school use. Recording is accomplished by magnetically impressing a fine steel wire or narrow, sensitized tape. The general principles underlying the operation of both the wire and the tape recorders are the same. Hence, the following discussion will deal with both types of recording machines.

The wire or tape is contained on a spool, and the length of the wire or tape determines the recording time. Most machines take a 15, 30, or 60-minute

spool, all interchangeable. The heart of the machine is the magnetic head, which on most machines is used to magnetize the record in the recording process and to take the magnetic impulse from the record in the playback process. The wire or tape is threaded from the spool through the magnetic head onto the take-up drum in the same manner for either recording or playback. The controls are no more complicated than in a disc-type recorder.

The advantages of this type of machine are that very fine reproductions may be obtained by even the inexperienced operator. There is no expense for needles, and needle-noise is non-existent. The wire or tape may be played repeatedly with no appreciable loss in accuracy. There is no groove to wear out. Experiments have shown that a magnetic recording may be played back thousands of times with no noticeable loss in fidelity or volume. The wire or tape may be "erased" and used over and over again for new recordings. The longer wires or tapes permit a full hour's program to be recorded without the necessity of stopping to change records. The equipment available is less bulky than that of the disc recorders, and it is more easily transported from room to room.

The disadvantages of this type of equipment are in the initial expense of the spools, which range in price from $2 for a 15-minute spool to about $5 for a 60-minute spool. At these prices, it is usually too costly for the class to keep a great number of recordings for future reference. Furthermore, since few homes have the new equipment required for playing this type of recording, students are not able to take these home for additional study. The desired portions of the recordings on these takes or wires cannot be easily and quickly located for playback. On most machines it is necessary to take time to rewind the wire or tape before the recorded program can be played, and the record must be rewound after each playing.

Some difficulty[1] has been encountered on the wire recorders at our school because of careless handling of equipment. We found that if the current is turned off suddenly while the wire is running through the machine there is a tendency for the wire to "backlash" and snarl. Anyone who has spent hours trying to untangle this fine wire, four-thousands of an inch in diameter (this is thinner than a human hair), will agree that there is a distinct disadvantage. The best solution found for this has been to cut the tangled mass from the wire and to knot the two ends together. This shortens the playing time, of course, but does not interfere with the operation of the machine. However, since the wire is wound on a take-up drum as the recording progresses, necessarily the speed of the wire as it passes through the magnetic head varies; that is, the end of the wire moves through the

magnetic head more rapidly than the front part. If a considerable section is cut out and the wire is spliced, the fidelity of playback of the section which follows the splice will be poor, and it will probably have to be re-recorded. The spools of tape have been found to be less likely to tangle and twist. The tapes have an additional advantage in that they may be "edited" by snipping out short sections with a scissors and cementing the ends of the tape together.

CLASSROOM USE OF RECORDERS

The uses to which recording equipment may be put in the classroom are at once apparent. Speech classes will immediately benefit by being able to hear the recorded speech of any individual or group played back. Invariably, the first comment of the listener will be, "But that is not the way I sound!" And that is probably correct to the individual whose voice has been recorded . But it is the way he sounds to his listeners, and that is the important thing. The student can hear his errors and set about consciously to improve them.

Slow readers are helped a great deal by hearing themselves read on a recording. Difficult words and passages stand revealed. Willing students usually show great improvement after a few recordings of their readings have been played back. Oral presentations and plays may be recorded and played back to study the enunciation delivery, and timing of that activity. Music classes can, of course, benefit greatly. A voice or instrument recording can be made and listened to for analysis. As improvements are made, progressive recordings may be prepared in order to compare them to previous ones to see where more practice is needed. On the 15 or 20-minute discs, or the longer wires or tapes, rehearsals of a glee club or orchestra may be recorded for study and improvement. Systematic use of recording equipment can be made in teaching language, drama, debate, and the like, by the alert instructor.

So far our discussion has dealt with equipment and materials for making recordings in the classroom. An entirely different, but equally important, phase of audio education is the use of prepared records and transcriptions in the classroom.

There is no essential difference between a record and a transcription. Both are discs on which a continuous groove has been engraved or embossed. The term "record," however, is usually applied to the 10 and 12-inch discs which are commonly sold for home use and operated at 78 r.p.m. These may be played on any commercial phonograph. "Transcription" is the term usually applied to the 16-inch disc used in

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1. Editorial Note. Since this article was written the trend in schools has been to buy tape recorders rather than those which use wire.

radio recordings. This operates at 33⅓ r.p.m. and must be played on special equipment. Many transcriptions are cut from the inside out. The operator should read the label on the disc carefully before playing the transcription.

Recordings may be obtained from a variety of sources. Most of the state bureaus of visual instruction now have libraries of recordings which may be booked the same as films or slides. The Federal Radio Education Committee Transcription Exchange of the U. S. Office of Education will send on request a catalog containing a full description of its notable free loan service of transcriptions to schools. Local radio stations also are often happy to allow schools to use their transcriptions of certain broadcasts. Many commercial sources offer transcriptions on loan or for purchase.

The uses in education to which the forward-looking teacher can put this type of instructional material are as varied as the imagination of the teacher will allow. Music classes may obtain recordings made by top-flight artists and instrumental groups. English classes may hear some of our contemporary poets read their better-known works. Foreign language classes will benefit by listening to the language as it is spoken by a native using his mother tongue. Literature classes may now have access to selections from the classics recorded especially for school use. Drama groups may hear experienced actors read a play in a recording with all the necessary sound effects. History classes now have available recorded speeches of the great statesmen who have played important parts in charting the course of the earth-shaking events of our times. Science classes may have presented to them recordings vitalizing outstanding discoveries in their fields. The educational possibilities stretch out to infinity.

Radio Programs

In considering the audio phases of education we must not neglect the values of radio. It is true that a majority of the programs put on the air are not especially designed for educational use. In fact, a few programs seem to be designed for an exactly opposite purpose! However, there are a number which the alert teacher can use in his work. Some of these, such as *The University of Chicago Round Table* (NBC), *Tell It Again* (CBS), *The Passing Parade* (MBS), and *The Metropolitan Auditions of the Air* (ABC), to name only a few of the better-known programs, are definitely designed with an educational purpose in mind. Other programs and "on-the-spot" broadcasts provide fine contributions for particular classes.

But the question at once arises, "How can I use a program broadcast at 8:00 p. m. in my 10:00 a. m.

class?" And that is indeed the most vexing problem in trying to use radio for educational purposes. Some larger school systems have made notable progress in establishing educational broadcasts over commercial stations during school hours. Others have set up their own broadcasting stations. For most of us neither of these possibilities offers a solution. It is possible to give pupils a "listening" assignment to a particular program on one day, and then develop class discussion of this program the next day. This, however, is not an ideal method. The listening opportunities of students will vary greatly. Some students will try to find excuses for not listening to the program, and others simply will be unable to listen at the time of the program.

Record Radio Directly

The best solution is for the teacher to *record the program directly from the radio broadcast* on a wire or tape recorder at his home or at the school. Then the record may be used in his classes at the time when the class is ready for that type of activity. The program, or parts of it, may be played over and over as needed. The listening conditions for the class are controlled, and everyone feels he is participating in an educational procedure. This type of recording is no more difficult to make than any of those discussed previously in this paper. Some machines have built into them a mechanism for recording directly from a radio broadcast. With such devices, it is necessary merely to tune in the desired broadcast and flip a switch to *record!* However, any type of recorder may be used to record a radio program by simply setting up the equipment as for any voice recording, and placing the microphone in front of the radio speaker. Excellent results have been obtained in this manner with the machines in our school.

For the teacher who likes to put his school work out of mind in the evening, there is now available a radio-receiver recorder unit with an "on-off" control clock. Tune in the radio to the proper station, set the clock for the time the program will come on the air and for how long it is to record, and forget about it until the next day. The recording will be made automatically when the program comes on the air, and the machine will turn itself off when the program is over!

This paper has attempted to outline the possibilities of a somewhat neglected field of education. It is hoped that these suggestions will serve to point out how instruction can be improved by using a greater variety of audio methods. The possibilities of the field are limited only by the enterprise and ingenuity of the teacher. To those whose approach to teaching is the experimental one, audio methods offer fascinating opportunities.   ✪ ✪ ✪

Boys and girls today have more and more things to learn. The richness of content involved in learning experiences is now generally recognized and makes teaching a more complex task. Students also need better developed powers and skills to be able to function in the rapidly expanding world. They are bombarded with all forms of propaganda. Radio, the film, the book, the pamphlet, the newspaper are all pressing to control information and opinion.

What Is This Business of Teaching With Records?

By
THEODOSIA STRATE-MEYER
Audio-Visual Guide, Vol. 15, No. 8, Apr., 1949. P. 12.

Are records classroom gadgets or are they functional tools to be used in good teaching?

Are records things to be played for a few minutes' entertainment or are there broader values involved in their use?

Is every recording adaptable for teaching or can a wise selection be made?

Listening and discussing have long been important forms of children's school work. These activities will continue to be a major part of their lives. Therefore, an effective education requires that training in listening be an acknowledged and planned part of the curriculum, and that tools for this specific purpose be used. The record, as a listening tool, is especially flexible for this curricular purpose. In effect, the record captures a happening in such a way that it may be studied in advance of classroom use. It can bring a live situation into focus when it is most needed. It can be played to bring out the full impact of related circumstances, and it may be replayed as often as necessary.

Since training in listening is inherent in teaching, and the record is the tool especially helpful in developing listening habits, its organization and the way in which it is used should be planned so as to help students build constructive listening habits—to know how effects for arousing feelings are achieved. The purpose is not to make students react with completely rationalized control but to develop within them the power to feel without being swept off balance by feeling alone. Students should achieve the type of aural understandings which will take records, radio, sound films, wire recordings, public speeches, group forums and discussions out of the realm of passive hearing into active listening.

To attain real value in studying with records involves their integration in the unit of study. The record must be related to what the group is doing or intends to do and must have the qualities which will help students to grow in understanding. This does not mean that records be limited to giving factual data; many records will provide information, but their unique qualities lie in creating attitudes and a feeling of direct, living experience. It is also important that the qualties of records be such that they lead into further activities of study.

The development of techniques for teaching with records is not a hit-or-miss proposition. An illustra-

tion can be made through an actual experience with a record which has been rather widely used for teaching. *The Man Without a Country*, selected under the American Book Company-Decca Records cooperative plan.

The class group was a junior-high-school social-studies section. The Constitution was being studied as a curriculum unit in citizenship. While the students actually were citizens, they still needed to understand how constitutional rights and privileges related to an individual's daily living. The abstract terms needed to be translated more fully into personal experience. To fulfill this class purpose, at the time when the students were most ready for the experience, the teacher used the record of *The Man Without a Country* to bring before the students the life story of a man who carelessly forfeited his citizenship. This story, which had been written as propaganda during a time when the nation was confused about its citizenship rights, was a logical vehicle to stimulate class thinking and extend their understanding. This was the point used as orientation for playing the record.

The qualities within the record are also important in contributing to the desired learning. The dramatic incidents of Nolan's life are organized to illustrate the meaning of citizenship to one person. The incidents translate for the student such abstract terms as "freedom of speech" into the daily privilege of sharing conversation with one's fellow-men. The recording techniques and effects are also planned to arouse feelings of sympathy and justice. Voices of different characters are used to stimulate the listener's identification with various characters while, on the other hand, the narrator's voice identifies the listener with the sweep of historic time spanned by Nolan's life.

The class response to the record at the end of the playing was one of complete silence. The students were visibly impressed, yet this could have been only one more story experience had the class not been guided by the teacher in follow-up activities. In discussing the record-story, two areas of learning developed: one, further recognition of what constitutes citizenship; and two, an opening study of the nature of propaganda. In making the latter study,

the story as given on the record was first analyzed in this light. Then the students became interested in looking at the record technique as an influence on opinion and feeling. They compared the story as written with the script of the record. They replayed sections of the record for effects. This healthy discussion and evaluative listening led the class into a consideration of propaganda as it is used in influencing the present-day citizen's actions. They began to recognize the power of the voice, of music, of dramatic situations to create opinion. They expressed ideas of propaganda and citizenship in drawings. Their study was leading into new areas; they were developing habits of active listening. This was only one group's experience with a record for teaching; other classes would find other uses even for this same recording. It might have been integrated with study of the short story or used to give reality to an historical period. Such, in a general view, is the business of teaching with records.

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"Improvement" is the operating charter of all school administrative officers at the present time. Predominant in the factors for improvement is the in-service training program for teachers and thereby increased efficiency in learning and more completely balanced development in children.

Tape Recorder Extraordinary Aid to Education

By
JOHN GUY FOWLKES
The Nation's Schools, Vol. 44, No. 4, Oct., 1949. Pp. 29-30.

As is the case in industry, a truly effective program of teacher improvement can be realized only if the teachers themselves take over the responsibility for such improvement. Most teachers desire to improve; they are eager to analyze their own teaching practices and to take steps toward higher competence in terms of their self diagnosis.

Similarly, children will learn more effectively if they, too, may be self-diagnosticians and "see" and "hear" how their learning habits can be improved. All of us know that tone of voice, pitch of voice, clarity, pronunciation and enunciation are major factors in teaching and learning. The tape recorder offers unlimited opportunity for teacher and learner improvement. The following discussion presents a few familiar teacher-learner situations in which the tape recorder can be used exceedingly effectively.

The value of demonstration and observation in the process of becoming more expert in teaching has long been recognized. How many times superintendents and principals, after having heard a particularly inspiring or helpful talk at a convention, have said, "How I wish the staff at home could have heard that speech."

MODERNIZES TEACHERS MEETINGS

The tape recorder makes possible the offering of a wide variety of lectures and speeches to the teaching staff as a whole, or to groups within the staff, such as all elementary school teachers, all high school teachers, the primary teachers, or other similar special audiences. Programs of the Town Meetings of the Air, various radio panels and forums, and many other presentations of economic and social problems may well be recorded and used at teachers meetings as the kickoff for group discussion and analysis of contemporary problems.

Improves Pupils' and Teachers' Speech. How many times teachers have said, "Johnny, if you could only hear yourself you just wouldn't talk like that." Also, how many times in such situations has Johnny had no notion of what the teacher meant? How many times have children frantically waved their hands and asked teacher to repeat explanations or directions? How many times have pupils wanted to tell the teacher that she was not talking loud enough or was slurring her words?

No longer do either children or teachers have to take the other's word for it that classroom speech is not what it should be. The distastefulness of "ah's," "oh's," and "well's" as well as other stammerings in classroom speech can be heard and eradicated as both children and teacher listen to what they have said.

The tape recorder is particularly useful in elementary reading classes. Children will be motivated toward better reading habits by being able to hear themselves read. Pronounciation, enunciation and rate of reading may be markedly improved by having children listen to themselves and others.

The tape recorder has proved helpful in encouraging shy children to talk more in school. Virtually all of us are curious to hear how our own voice sounds.

The shy child can more easily be encouraged to participate in a recorded program and thus unconsciously develop a habit of talking more. On the other hand, the youngster who talks too much can hear how much he steals the show and thereby understand how he should give others a chance to talk. Bashful and weak-voiced children can be shown that it is necessary to project their voices if they are to be heard and understood. This process of hearing themselves as others hear them does much to prevent children from getting the feeling that the teacher is picking on them.

Poetry in the lower grades presents a challenging means for utilizing the tape recorder. In no other

type of reading do inflection, rate and variety of pitch in speaking carry more importance to meaning. Monotonous delivery and uninteresting and, indeed, erroneous phrasing become immediately apparent to the reader when he hears himself read.

Recorder and Foreign Languages. The recorder presents unlimited possibilities in the learning of foreign languages. Children can talk to the recorder, listen to themselves, and greatly accelerate their learning of the oral aspects of any foreign language.

Recorder and Music. Choral reading can be helped tremendously by the recorder. Similarly, with the chorus, orchestra or band. It is difficult, particularly for the uninitiated, to detect mistakes in pitch, rate and tone. The child musician taking part in the performance of a selection is likely not to appreciate the effect he is making on the ensemble because of high concentration on his own individual instrument or part.

FOR IMPROVED ASSEMBLIES

Balance and harmony among woodwinds, the strings and other sections of an orchestra can be best evaluated if one is apart from, rather than a part of, the performance. As a musician who has participated in the rendition of a selection listens to a recording of the selection which he has helped render, he hears it as the members of the audience heard it and consequently recognizes ways of improving his performance. School programs in the form of plays, speeches, debates, special reports, declamations and oratorical contests lend themselves to recording either for future reproduction or for immediate analysis, and hence become a basis for improved school auditorium activities.

Recorder and Pupil Records. It seems entirely probable that individual pupil records in the future will include recordings of the pupil's speech, taken and filed from year to year or at appropriate periods of time. Such a practice would furnish a running chronicle of the child's development, growth and maturation as reflected in his voice and speech. It also would provide a means of letting parents hear how, over the years, their children have developed their speech habits with respect to breadth of vocabulary, nicety of diction, and general speech effect.

Recorder and Corridor Behavior. Happily enough, it is generally recognized that elementary and secondary school pupils should pass through school corridors naturally and freely, rather than in mute silence, or indeed in lock step, as was far too often the case many years ago. Similarly, it is recognized that cafeterias should reflect natural rather than artificial behavior. On the other hand, excessive noise, particularly because of raucous and boisterous speech in

both corridors and cafeterias, is distasteful and unpleasant.

Reduction of noise, particularly unnecessarily loud talking, is an excellent problem for attack in a school by a student council. How interesting it would be for a student council to make a recording of the noise in the hallway or cafeteria of a school without the other students knowing such a recording was being made, have the recording played in an assembly period with the entire student body listening, and then have the students decide how excessive noise in the corridors and cafeteria might be reduced!

UNLIMITED POSSIBILITIES

It should be realized that the tape used in the tape recorder lends itself to unlimited use. It may be cut into lengths, portions deleted, or odd ends easily taped together with Scotch tape. The recorder in the hands of the imaginative professional educator will furnish countless ways of improving the work of everyone in the school. For better administration, better teaching, and, hence, better learning, the tape recorder is indeed "aid extraordinary" to education.

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The Minnesota Department of Education has completed the first year of a two-year experimental tape recording project.

All Minnesota schools receive regular bulletins from the department of education listing programs available. Most of the programs are recorded from radio broadcasts, but a few are original. A school sends the department its tape, says what program it wants, and pays postal charges both ways. There is no other cost to the school. Recording costs are paid with funds provided by an educational foundation grant. Later, it is hoped, this may become a state service paid for by legislative grants.

Minnesota's Two-year Experiment With Tape Recordings

By
RICHARD C. BROWER
The Nation's Schools, Vol. 46, No. 3, Sept., 1950. Pp. 66, 68, 70.

Preliminary indications of the potential value of this service to schools are shown by the following statistics.

More than one-fourth of the more than 500 graded elementary and high school districts in Minnesota took part in the program during the opening months of the experiment. A sampling survey indicated that between 80,000 and 100,000 classroom contacts were made with the half million students enrolled in our schools. These figures should show a con-

siderable increase during the second year of the program as equipment is obtained and teachers become familiar with the materials available.

More than 2000 tapes were duplicated between Oct. 14, 1949, and May 18, 1950. English, guidance, music, history, social studies, science, health, driver training, conservation and foreign language programs were in demand in that order.

At the beginning of the school year 1949-50 approximately one-half of the 500 graded elementary and high school districts in Minnesota had tape recording equipment. A survey of schools in the state indicates that by the opening of the 1950-51 school year more than 90 per cent of all schools will have one or more tape recording units.

Our services, at present, can take care of 600 half-hour program duplications per month. In October, the first month of operation, the volume was at 3.6 per cent of maximum. This increased to 70.5 per cent during the month of March. April and May showed small decreases because of vacations, reviews and examinations. If increased demand warrants it, we can nearly double this output by adding more equipment; additional personnel will not be needed. Best estimates indicate that operations will begin this September at a rather high point and show a continuing growth during the school year.

All geographical portions of the state were served with educational radio broadcast materials. The material was used in classrooms ranging from kindergarten through twelfth grade and in schools ranging from one-teacher rural buildings to metropolitan high schools. The greatest use, however, was in the high schools, presumably because recording equipment is more readily available to high school teachers than to elementary teachers. This deficiency at the elementary level should be remedied. Our elementary curriculum offerings are equal or superior to those available to the secondary schools. The need for dramatic enrichment of the curriculum with the type of material radio can handle so well is even greater for elementary than for secondary students.

Perhaps one of the best indications of the value of recorded material for enriching classroom experiences is the fact that a large number of the schools using the service repeated orders. One school sent in 33 orders for 60 programs in nine subject matter areas during the second semester, after it had purchased a tape recorder. At least four more units now have been purchased by this school system, which employs about 110 teachers. Its program during the opening months was confined to the secondary area because of the limited amount of time and equipment assigned to the audio-visual director for work in the elementary field.

This situation is repeated many times in schools although the primary placement of an enriched audio-visual program logically is at the elementary level. One of the main points in the Minnesota project is to encourage the development of parallel programs reaching both elementary and secondary students with a wide variety of instructional materials and course of study.

In the schools in which this program has best served the needs of the students, it seems that it has been established through the efforts of an interested individual on the staff. In many cases, this was an audio-visual director, for approximately one-half of the graded elementary and secondary school districts in Minnesota have persons assigned specifically to this position. In other cases, the interested person was the superintendent or the principal, depending largely upon the size of the school. In all instances, however, when outstanding use of this material has been made, an interested individual has assumed the responsibility for stimulating classroom use of recorded radio materials. This, perhaps, would be true in the introduction of any new instructional equipment or material.

Administrators' Responsibility

School administrators have an important responsibility for seeing that this stimulation through leadership is available to their staffs. A sound instructional program is the greatest single responsibility of any school. It should logically take precedence over maintenance, finance, transportation or the dozens of other pressing administrative details of keeping school. A modern instructional program, because of the wealth of new materials available on film and now on magnetic tape, needs leadership from administrators.

Experience indicates that in school systems in which size warrants (10 teachers or more) a coordinator, charged with definite responsibilities to all classroom teachers, may be the best administrative device for getting an enriched instructional program before the students. Perhaps one hour a day for each 10 teachers should be held up as a goal when time is assigned for these coordinating activities, although schools have functioning programs with less than a one-tenth ratio.

The findings to date summarized indicate that:
1. It is possible to serve a geographical area with instructional materials of a radio nature with a reasonable degree of efficiency. Most of our tapes are in the teacher's hands within two or three days after they have been ordered. This means that materials are available to the teacher at the time of greatest need without her having to book them months in advance. Materials can be selected from a wide

range of offerings that can be expanded indefinitely. In less than a year more than 700 classroom items have been accumulated for distribution. It may be stated, too, that just as many have been rejected.

2. It is possible to offer this service at a reasonable cost in a unit the size of Minnesota, with 20,000 teachers, half a million pupils, 500 high schools, and more than 3000 rural districts. A minimum program, under which about 7000 tapes are duplicated in a year, can be maintained on a budget of about $1\frac{1}{4}$ cents per pupil per year. To meet an increased demand would cost about $2\frac{1}{3}$ cents per pupil per year. At the higher volume, this would work out to around 30 cents for each program duplicated. To this should be added the cost of postage, which ranges from 2 cents to 15 cents for each 15 minute program, depending upon the quantity ordered in a single shipment, and a small fraction of a cent per use for the school's purchase price of the tape. Our experience indicates that the average tape will make at least 40 to 50 pupil contacts so that the per pupil unit cost for using this material is nominal. The cost is, perhaps, lower per pupil contact unit than the cost for any other multi-sensory material, although this whole subject needs close examination.

3. The element of time and availability that has proved to be such an obstacle to educational broadcasting for classroom use in the past has been brought under a reasonable degree of control. Teachers can use a transcribed tape carrying radio materials in all sections rather than only in those in session at the hour of the broadcast. A tape recording can be played back days or weeks later for absentees or for students to review it. It can be repeated as often as necessary to provide for individual differences in comprehension.

4. Recordings can be supplied in quantity in a way that has previously proved to be impractical or impossible with almost any audio-visual medium. For example, it would be conceivable that all of the seventh-grade social studies classes in Minnesota could use a program dealing with the discovery of America on Columbus Day. All that would be necessary would be some limited degree of foresight in ordering, say two to three weeks in advance at the most, on the part of teachers. The permanent investment for specific materials for a specific occasion in non-duplicatable teaching materials runs into thousands of dollars; the permanent investment in a master tape is less than $5. The master tape can, through duplication, be indefinitely and rapidly expanded to serve the needs of any given occasion for a whole geographic area.

Research Needed

Just a word might be added for those interested in a duplicating project to serve an area. For ex-

tensive operations, where several dozen different titles are requested in one day, most efficient service is obtained by using pairs of professional type recorders. A trained and experienced engineer can comfortably take care of two pairs of machines. Under extreme conditions of demand, if clerical help was provided, it might be possible for one engineer to operate three pairs of duplicators. If each pair has a capacity of approximately 600 programs per month per operator, it is easy to decide what personnel and equipment are needed to do a given volume of duplicating.

There are definite limitations to the use of tapes and recorded instructional materials. Current events are history before they can be used. A "canned" program may seem less spontaneous, alive and real to a class than a direct broadcast. But that is an area in which we need some clarifying research.

Transcribed materials also have limitations when compared with visual and projected materials. Recordings are more "abstract" and less "real." They provide a sensory experience entirely different from that provided by visual materials, and so are not in competition with the latter. Both recordings and visual materials are needed in the teacher's kit of tools, for both have their separate and distinct functions.

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Q. SLIDES

The projection lantern was originally called *magic lantern*. It still commands, to a certain extent, that same interest that appertains to all things magical. A well-made, attractively colored, projected lantern slide develops at once a high level of interest in a group of children or adults to whom it may be presented.

The Lantern Slide in Education

By
GEORGE E. HAMILTON
In
The Stereograph and the Lantern Slide in Education.
Meadville, Pa.: Keystone View Co., 1946. Pp. 25-48.

Modern teaching needs demand in the classroom a projector of extreme simplicity and outstanding effectiveness. The projector should be available always for immediate use; and its illumination should be strong enough to meet extraordinary conditions of light in the classroom.

The Keystone Overhead Projector[1] has made a notable contribution to the use of lantern slides. The

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1. Editorial note: In the standard or "horizontal" projector for slides, the light passes directly from the source through the condensing lenses, the slide, and the objective lens onto the screen. In the overhead type, mirrors are employed in addition to the lenses. There are several kinds of overhead lanterns on the market.

following characteristics make it a very practical classroom projector:

1. Its six-inch focal length lens makes it possible for the instructor to have the projector near the front of the room and operate it himself instead of depending upon some student or other person to operate it from the rear of the room.

2. The Overhead type of projector makes it possible for the instructor to point with a pencil to items in the slides being discussed without turning his back to the class to point to the projection on the screen.

3. The motor-driven fan at the rear of the projector and the heat-absorbing glass in the front provide a cool projection table with cool slides, even though a 1000-watt lamp with consequently brilliant projection is used as the illuminant.

4. The open slide table makes possible the use of almost any sort of projection material—from lantern slides of any size, dimension, or shape to actual specimens, such as insects, bits of fabric, or any sort of transparent or semi-transparent object.

The Importance of Quality in Lantern Slide Projection

In order that the lantern slide may be effective in teaching, it must, as a matter of course, be a product of high quality. Amplification of slide exaggerates all faults and deficiencies. Slides that are not made from excellent original negatives, sharp in all details, become blurred, smudgy, inadequate pictures when enlarged. Furthermore if the quality of the negative and of the print is sufficiently high to the minutest detail, the amplified lantern-slide projection will show perspective to a very high degree. It will, consequently, be a picture of great interest to the group and, therefore, of high teaching value . . .

Educators in supervisory or directory positions cannot be too critical of the lantern-slide material being used under their supervision . . . Visual aids are used, primarily, for the purpose of building vivid backgrounds on which meaningful educational activity may be based. A vivid background cannot be built through the use of a vague, blurred, indefinite, inadequate, inappropriate picture. A teacher who is required to use projected pictures that do not meet the above requirements is, to a large degree, merely wasting time and defeating any value that might accrue from the use of visual aids.

Types of Educational Lantern Slides

We may make two general classifications of lantern slides being used in education — photographic lantern slides and lantern slides made by special nonphotographic methods. The latter are sometimes referred to as "handmade lantern slides."

Photographic Lantern Slides

In general there are four types of photographic lantern slides that may be classified as aids in teaching. They are the following:

1. *Reproductions of actual scenes or situations.* This includes pictures of geographical subjects, pictures of industries, pictures of nature study and biological subjects. In fact, all the actual scenes of the world of today and of the world of the past that are available for use in lantern slides to meet the requirements above should be reproduced from original negatives of the highest quality.

2. *Reproductions of prints or pictures.* Pictures in books, art subjects, old prints, and other similar subjects may be reproduced by photographing and printing on lantern-slide plates. Only pictures of excellent and clear-cut detail or pictures without great detail can be well produced in lantern-slide form. Half-tone cuts will not make good lantern slides; line drawings or lithographic drawings are to be preferred. By no means should pictures of this sort be used to take the place of photographs of actual situations that may be secured.

3. *Reproductions of diagrams and maps.* In this classification might be included all line drawings. Such slides may be reproduced on contrasty plates, preferably, when possible, keeping the entire field dark and showing the lines in white or in appropriate color. This emphasizes best the facts portrayed by the drawing.

4. *Reproductions of text material.* In this class may be included slides made from carefully prepared copy, such as song slides made from printed copy of just the right proportion, type of letter, and weight of lines to reproduce most clearly, or photographs of pages from books and other text materials not especially prepared with the best reproduction in view. Many times printed material in connection with pictorial material is of great value to the instructor. Here again lantern slides from half-tones should be avoided.

Handmade Lantern Slides

In recent years great interest has attached to lantern-slide reproductions that may be made by the teacher or by the pupils under his direction. Pictures for projection, of all sorts of materials, may be drawn on well-made etched glass with a lead pencil and colored with special lantern-slide crayons and inks. It is necessary that a very delicate satin-finished etched glass be used in this work, otherwise good projection is out of the question.

Furthermore pencils, crayons, and inks that will make color permitting the passing of the light must be used; otherwise instead of beautiful reproductions, which are possible, only dark, smudgy pictures will

be made. Although many of these slides will naturally be but crude reproductions of the things that they portray, they, nevertheless, offer a means of self-expression for the individual or for the group. This induces a high level of interest, which, to a very large degree, offsets the inferiority of the pictured representation.

The fact that the picture may be washed off the etched-glass plate, thus making the plate available for use over and over again, makes this type of visual activity very low in cost. This possibility of the repeated use of etched glass is particularly applicable to high quality mud-ground etched glass.

The so-called typewritten slide is another form of handmade slide of very interesting possibilities. It is made by first typing the material to be presented on a sheet of cellophane, lantern-slide size. The typing is done through carbon paper. The cellophane then is bound between two pieces of plain lantern-slide glass, and is ready for projection. There is no end to the opportunities that this type of lantern slide offers to the class or auditorium teacher, who can thus quickly and vividly present text materials to large groups. Where only temporary use is desired, this low-priced form of lantern slide may be used to take the place of photographic reproductions of text materials referred to above.

SUBJECTS IN WHICH LANTERN SLIDES ARE USEFUL

There is scarcely any subject taught in schools in which lantern slides may not be used to advantage. The first and most obvious use, of course, is in connection with the teaching of the social studies. Photographs of practically every interesting geographical fact in the world have been secured. There is such a wealth of material that through selection it is possible to secure lantern slides of very high teaching value. Through the use of these slides, the teacher of geography is enabled, first, to present vividly and quickly geographical situations within the experience of no one in the group, and secondly, to bring readily to the common attention of the group important situations not sufficiently vivid in their minds to make them highly useful in learning.

There is in connection with the work of the teacher of geography, of course, the possibility of presenting in lantern-slide form maps and charts, both photographic and handmade, to enrich the daily teaching program, to fix the facts taught, and to save time in presentation.

Lantern slides have great possibilities in the teaching of *history* and *literature*. The geographic factors, of course, have a large place in the teaching of such subjects. All such aspects of the subject

matter may be presented in lantern-slide form. In the teaching of history there is the possibility of showing monuments and historical landmarks in very attractive form. One of the great advantages of travel seems to be the interest engendered by visits to the shrines of history. Although presentation in lantern-slide form is perhaps not as highly valuable as a visit to the situation itself would be, nevertheless, it brings within the schoolroom thousands of such situations entirely beyond the possibilities of a personal visit by any member of the group. Frequently the pictures of such real situations can be effectively combined with old prints, cartoons, pictures of manuscripts, etc.

In the teaching of literature, as well as in the teaching of history, there are paintings, old prints, and old pictures of all sorts that may be reproduced and presented. Manuscripts and historical documents are also of great interest and value. Teachers of history everywhere are finding the use of the stereopticon a most valuable aid in really getting over the subject matter they wish to present and in doing it at a great saving of time.

Elementary science offers a rich field for the use of the lantern slide. Excellent photographs of almost every subject the nature study teacher wishes to present are available. Birds, flowers, and trees may be reproduced in plain form or in color, by photographic process or through the use of handmade-slide materials. Here, again, the elements of vividness and the saving of time are beyond question.

In the field of *general science* and of the specific sciences in more detail, the lantern slide has long been recognized as a valuable aid. In *biology* particularly, the photomicrograph presented in lantern-slide form makes it possible for the instructor to discuss with the group quickly and readily, with common understanding, subject matter that could not be approached so readily in any other way. Photographs of microscopic life and of many life processes have been made. Photographs in all lines of biology are available. From such photographs may be secured lantern slides for almost every teaching situation in which the teacher of biology may find himself. Add to these the diagrams that may be reproduced from highly scientific sources or those that may be made in the classroom, and the biolgy teacher may have a lantern-slide equipment that will increase beyond common belief the effectiveness of his teaching. In *physics, chemistry,* and the other sciences, there are photographs of processes and diagrams without number that may be thrown up before the group for common observation and discussion with common understanding of the situations portrayed. In all the sciences the use of lantern slides, when the saving of time made possible is considered, assumes economic

importance far in excess of any cost that might be incurred.

Recent developments have brought to the attention of educators what is perhaps the greatest possibility yet found in the use of the stereopticon and lantern slide. We refer to the use of the lantern slide in teaching *reading*. First, there is the possibility of projecting a photographic slide—usually preceded by individual use of the duplicate stereograph—or a handmade lantern slide on the blackboard, and then writing words, phrases, and sentences into the picture. This procedure makes use of a principle of close association, long understood by teachers but never put into use in any more interesting or effective manner.

Second, there are the possibilities of cellophane typewritten slides, which give the teacher of beginning reading a wealth of chart material, cheap and easily adaptable to changing needs and situations. Furthermore, with typewritten slides made interesting and meaningful by a few photographic and many handmade lantern slides, the teacher of beginning reading now is able to develop socially, on the screen and on the blackboard all the techniques of reading.

In an experiment conducted in Evansville, Indiana, eighty children were taught reading by this method throughout four months. At the end of that time, those children showed an average gain of two months in reading ability over a similar number of children, of similar ability, in a controlled group. Teachers have long suspected that many six-year-old children are not sufficiently mature from an eye-hygiene point of view to accommodate their eyes readily to the printed page at reading distance; whereas such children would have little accommodation difficulty at blackboard distance. The Visual Survey Tests have disclosed many such problems . . .

Teachers of foreign languages are awakening to the possibility of making subject matter, otherwise dull, full of interest when brought vividly to pupils through the use of lantern slides. Teachers of mathematics have found that they, too, may make valuable use of the projection lantern in presenting quickly formulae or drawings and pictorial backgrounds for mathematical facts. Instructors and lecturers everywhere are coming more and more to the understanding of the value of using the projector and lantern slides where picture representation will immediately make clear and vivid, to everybody in the group, statements and facts being presented.

Using Lantern Slides versus Showing Lantern Slides

The tendency in modern educational procedures is to *use* lantern slides rather than just to *show* them. If the teacher is provided with appropriate lantern-slide units that meet definite visual needs in his program and if he uses these lantern-slide units with definite teaching objectives in mind, then the *use* of lantern slides as against the mere *showing* of lantern slides will be guaranteed.

Such a teacher will never need to be cautioned "not to use too many lantern slides at one time." He will use only such and as many as are useful to him, either in making the subject matter clearer than it could be made otherwise or in doing this in less time . . .

When Should Lantern Slides Be Used?

There are, in general, two rather obvious but fundamental uses of lantern slides in the program of the teacher. First, he may find it advantageous to use a lantern slide or a group of lantern slides in the introduction of a subject or unit of study. Such a use presupposes his thorough information on the entire subject, and his skillful use of the lantern slide to arouse interest and curiosity in order to secure more intensive research and study on the part of the group. Such a use of lantern slides will probably imply simple exposition on the part of the teacher, with the group assuming no participation beyond occasional questions and more or less superficial comments.

A second common use of lantern slides comes at the close of the study of a subject or unit of work for review or checking up. Such a use, implying, as it does, detailed and thorough preparation on the part of each member of the group, naturally develops into a wholesome group discussion rather than a mere exposition on the part of the teacher. Sometimes individual pupils are assigned the task of introducing specific steps in the development of the subject by presenting the discussion of one or more lantern slides.

In this use of lantern slides at the close of the study of a subject, three or four definite facts are worth noting. The final presentation may develop information new to the entire group. A second possibility is the development of information known to some of the group but not to all of them. A third technique is the correction of misinformation that may have been developed on the part of any individual pupil—sometimes, we might add, even on the part of the teacher . . .

How Many Lantern Slides Should Be Used?

A correct answer to this question is suggested by the story of Abraham Lincoln, who said, on the occasion of someone's commenting on his long legs, that after all they were just long enough to reach the ground. The teacher who is using lantern slides as

aids in teaching rather than merely showing lantern slides, will use just as many lantern slides as are available and as are needed to make the presentation clear, forceful, and effective.

There seem to be two rather distinct ways of using lantern slides that may affect the number used It seems reasonable to presuppose the necessity of using a *series* of slides in presenting most facts in the social studies. For example, if one wished to use lantern slides as aids in teaching a group about the agricultural products and activities of the state of California, it would seem necessary that at least ten and maybe more lantern slides would be required. One or more lantern slides would show the raising of wheat, one or more would be assigned to grapes and other fruits, and one or more would be required for the various types of orchard fruits. Obviously a series of slides is necessary.

If lantern slides were to be used in teaching something of the life and times of Abraham Lincoln, here again it is obvious that a series would be necessary. In both cases it is obvious, also, that the teacher would use lantern slides that present facts definitely related to teaching needs, and enough of such facts to make the activity definitely worth while; but, at the same time, not use so many lantern slides as to bury the subject matter to be taught in poorly understood and poorly assimilated picture material.

In other situations lantern slides are used as illuminated charts. This use of lantern slides is particularly plausible in the teaching of high-school sciences. For example, in presenting Mendel's Law to a high-school group in general science, one might use a lantern slide with a series of panels in it, each panel below the first showing descendants of two animals with contrasting characteristics in the top panel. In such a case, one lantern slide will suffice for the entire and complete demonstration. If another is used, it will be only for the sake of repetition.

Such a use of lantern slides is obvious. Here, again, the teacher is aided in presenting subject matter more clearly than he could present it without some such means, and presenting this subject matter in less time. The possibilities of the use of lantern slides, singly or in pairs, in the teaching of high-school sciences offer one of the most valuable possibilities of the stereopticon as a visual aid.

The Use of Motion Pictures Does Not Displace the Use of Lantern Slides

It is common to hear poorly informed persons suggest that lantern slides were outdated by the coming of motion pictures.

No informed person will deny the tremendous possibilities of the use of motion pictures in education. Their use is limited only by the willingness of school administrators and boards to provide the money for the making of worth-while educational films.

At the same time the use of motion pictures cannot assume the place of the use of lantern slides in teaching. Whether a motion-picture film is a silent film or a sound film, its showing is likely to engender temporary passivity on the part of the pupils. Discussion during the showing of the film is so obviously out of place and difficult that it may be termed impossible. The members of the group are merely passive lookers and listeners until the film is finished. Discussion follows as an activity distinct from the viewing of the picture.

It is evident that correct use of a series of lantern slides implies an entirely different procedure. As the lantern slides are shown, the teacher may state certain facts about the pictures or ask questions about them. Also the same may be done by any or all of the pupils. A wise teacher makes the lantern-slide period a *discussion* period rather than a *lecture* period. The lantern-slide period is an activity of combined viewing and discussion, completely adjustable to the direction of the teacher at all times.

Classification and Filing

Lantern slides, perhaps more than most still pictures, must be well organized, cataloged, and indexed in order that teachers may have ready access to them. Proper filing cabinets are of paramount importance. Lantern slides are more or less fragile and are expensive enough to warrant some investment in proper filing equipment.

The most obvious and simplest method of organizing lantern slides is in units conforming to the requirements of the curriculum . . .

Such units should be housed in durable cases so that there will be as little difficulty as possible in getting the complete unit in its case for use when desired and in returning it to its place when the use has been completed.

Accessibility for Ready Use

Lantern slides are teaching tools; and, like the well-known tools of the artisan in the successful pursuits of industry, they are valuable tools only if they are easily available for use when those important occasions for use arrive. Educational experts should apply the same standards of measurement that efficiency experts use in manufacturing commercial lines. They should endeavor to measure quality as well as quantity of output. The costs of installation and upkeep should be checked against the prospective product. When such scientific attitudes are taken toward the use of visual aids of all types, among which lantern slides hold an important place, then only will really complete and adequate installations

be made and thereafter results commensurate with the investments made become apparent.

TEACHERS' MANUALS AND DESCRIPTIVE NOTES

The value of a unit of lantern slides in teaching is increased immeasurably by a well-prepared teachers' manual. Such a manual should be prepared by outstanding educational authorities in the subject matter involved, and should provide the teacher with interesting suggestions and source materials that may be inspirational and truly helpful to him in his teaching . . .

Nothing will contribute more to "using lantern slides" as against "showing lantern slides" than teachers' manuals of outstanding quality in the hands of the teacher. The writing and the publication of such aids to the use of visual aids offer a big opportunity for the educators and for the educational publisher.

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Increase in the use of visual aids in our schools has brought about an increase in available material. New pictures, charts, maps, models, stereographs, lantern slides, motion picture films, et cetera, are continuously being added to school collections.

There is, in fact, such a wealth of material that there has arisen some confusion and uncertainty as to just what visual aid might be best suited to a given teaching situation. Some materials are poor and should not be used at all, and some are well suited to specific purposes but should not be used for others. In passing, it may be noted that this condition points to the desirability of a central clearing house where visual aids could be listed and information regarding all types of equipment and materials be available. This should not be entrusted to a commercial concern, but should properly be under the control of an unprejudiced authority on visual education.

The Versatile Lantern Slide

By
W. T. R. PRICE
Educational Screen, Vol. 12, No. 6, June, 1933. Pp. 159-160, 176.

Certain kinds of visual aids require for their presentation more or less expensive apparatus which may not be within the school budget. Specifically, the motion picture projector, lantern slide projector and reflector come under this head. Wall maps and other visual aids are also often expensive in themselves.

The matter of sufficient funds to carry on an extensive program in visual instruction was a problem presented to Scarborough School[1] at the beginning of the year. It was the opinion of the director that more definite results could be obtained by concentration on some one type of visual material at the outset.

IMPORTANCE OF THE LANTERN SLIDE

Among the great variety of materials available for visual instruction, it is doubtful if any one can cover so great a field or lend itself to such varied uses as the lantern slide.[2]

The scope of the motion picture is definitely limited to the protrayal of motion . . . Printed charts, maps, and graphs cover a limited field of subject matter which is governed more or less by the publishers. Actual objects or models of them cannot always be obtained, and in any case can be made to illustrate only a small part of the ever growing requirements of visual instruction. Within its limitations, each of these mediums has a distinct function in presenting to the student a certain kind of visual image, and it is not intended to underestimate their value or to assume that any one type of visual aid can be made to answer all purposes.

The lantern slide, until recently, has been limited in its technique almost entirely to photography, and there is available an enormous variety of valuable material of this character. A large proportion of these photographic slides is confined to historic scenes, depicting cities, buildings, ancient ruins, street scenes, interiors, et cetera. Another large group is concerned with photographing reproductions of objects of art—such as scultpure, paintings, and other material from museums and private collections. A smaller group, but one which is growing with the advance of visual instruction is the photographic reproduction of maps, charts and diagrams. There is also the school-made photographic lantern slide, which is in much the same class as the still-film, except that it is somewhat more costly. Where a school is already equipped with lantern slide projection apparatus, this slide is a valuable addition.

It is probable that there is a lantern slide to fit almost any condition where a lantern slide could be used. The procurement of the particular slide, however, may present difficulties. This points to the need for a central clearing house where information could be obtained from an unprejudiced source.

It may be gathered from the foregoing that the lantern slide covers a wide field of information and that its proper use can be made to fill many of the needs of visual instruction. It was not this assumption, alone, however, which governed Scarborough School in the choice of the lantern slide as a medium of instruction on which to concentrate its attention.

THE HAND-MADE LANTERN SLIDE

Quite recently the pupil-made lantern slide has come into prominence, and it is this new slide which has appealed particularly to the Scarborough faculty.

1. Editorial note: Scarborough School is located at Scarborough-on-Hudson, New York.
2. Editorial note: The lantern slide discussed throughout this article is the 3¼ x 4 inch standard slide.

Here is a medium of expression for the student in which he may share with his fellow students, in a definitely dramatic fashion, his knowledge and his art. The making of a lantern slide and the projection of it on the screen before the teacher and the class carries with it a certain fascination which is productive of unusual effort—not only in artistic technique, but in the accurate portrayal of special study and research which may have been necessary for the accomplishment. The artistic effect of these efforts may or may not be altogether satisfactory from the adult point of view. In either case the study and research have been worth while, and it is interesting to note that most of the student criticism is constructive and that ridicule of the artist's efforts is rarely in evidence. Contrary to expectation, a large proportion of the student-made slides present a creditable appearance on the screen and many are admitted to the permanent collection of the school . . .

Referring again to the photographic slide, it is patent that many of the subjects treated could not be reproduced effectively in hand-made slides, even by an experienced artist. Their whole value from an educational point of view lies in the accuracy of photographic reproduction. A good photograph of a tiger, Raphael's Madonna or Hong Kong harbor is more convincing than even an excellent drawing, and these subjects would most certainly present difficulties to the amateur.

Some Advantages of Pupil-made Slides

While correct representation is desirable and often essential in the pupil-made slide, its greatest value lies in its ability to express ideas.

(a) *Opportunity to express or share ideas.* By far the most important pupil-made slide is the original drawing in which the pupil expresses an idea and shares it with the class under ideal conditions. The usual distractions are removed with the darkening of the room and the attention of the class is concentrated on the screen.

(b) *Stimulation to research.* There have been numerous instances at Scarborough where pupils have improved their standing in certain courses entirely through their interest in making lantern slides.

(c) *No extraneous material shown.* In the pupil-made slide it is possible and desirable to present only such information as pertains directly to the subject. This is not always the case in photographic slides which may include distracting elements.

(d) *Drawings are perfected before presentation.* A criticism of hand-made slides has been "Why not make the drawings on the black-board and save the expense and bother of projection?" The answer is that the black-board drawing is done under pressure. The work is hurried and often unsatisfactory, whereas the lantern slide may be done at leisure and perfected. Also, the black-board technique usually comes off poorly in comparison with lantern slide projection.

The Teacher-made Slide

The functions of the teacher-made slide are similar to those of the pupil-made slide; the main difference lying in the better organization of material and improved technique, though slides by students with artistic ability frequently surpass the efforts of the teacher.

The hand-made slide is extremely valuable to the teacher as a means of supplementing text-book material or other visual aids and covers a range from the simplest pencil diagrams or text to carefully executed maps in full color. It is safe to say that there is no subject in the school curriculum where the teacher-made slide could not be used effectively in specific instances . . .

The making and using of lantern slides took on such proportions that the demand for projectors soon became greater than the supply, and it was found that several classes frequently needed the same lantern at the same time. The Director expressed a hope at the beginning of the year that each class might eventually have its own projector—and this hope has been almost realized in a period of eight months. There are now fifteen lantern slide projectors in the school. A few were bought new, some used or rebuilt and some were made at the school from stray parts. All of the class rooms are equipped with dark window shades.

Summary

Some of the more important advantages of the lantern slide as a visual aid are as follows—

1. Wide range of material already available.
2. Wide range of hand-made material possible.
3. Supplements many types of instructional material.
4. Induces pupil expression.
5. Induces pupil participation.
6. Dramatic presentation.
7. Ideal concentration.
8. Ease of manipulation.
9. Small storage space.
10. Small cost.

The value of the lantern slide as a visual aid has been forcibly demonstrated to the faculty of Scarborough School during the present (1932-33) school year.[3] and it is hoped that the material presented in this paper may be of benefit to others who are experimenting along similar lines. ✪ ✪ ✪

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3. Editorial note: This article is included not only for its content but because it was one of the first printed descriptions of the "handmade" slide and its use in teaching.

R. SLIDEFILMS (STRIPFILM, FILMSTRIPS)

In the realm of stills the most commonly used aids are: flat pictures, photographs, paintings, stereographs, glass slides, and filmstrips, or filmslides. In deciding upon which of these may be used to the greatest advantage we must take into consideration the following criteria:

Filmstrips as an Educational Aid

By
THEODORE R. WRIGHT

Visual Review. Chicago: Society for Visual Education, Inc., 1940. Pp. 17-19, 54-57, 60.

1. What subjects may be best taught with this aid?
2. How much will it cost to provide a sufficient number of these aids?
3. Are these aids authentic, backed by the experience of practical educators, or are they a figment of some impractical mind?
4. How conveniently can these aids be handled and projected for class use?
5. How much storage space is required for them?
6. How difficult are they to transport or circulate among the schools using them?
7. How long will these aids last? Are they perishable or may they be kept over a long period until a large and comprehensive library has been accumulated?
8. Are they free from objectionable advertising, propaganda, or any suggestion of indecency or immorality?
9. How well do they lend themselves to modern methods of teaching; for instance, the large unit plan of instruction?

Without detracting in the least from the value of other types of aids, when the above criteria are applied, one is forced to the conclusion that the logical answer in most instances is use of filmslides, sometimes called filmstrips but more commonly known as "Picturols." Let us measure them by our yardstick and see if they are a full 36 inches. Filmstrips are made up of a series of related pictures printed on 35 mm. motion picture safety film. Though the pictures are all related to the same topic and arranged in a definite sequence they are not in the form of a motion picture, but are projected entirely as stills.

There is no doubt that "Picturols" embrace a wider field of subjects than do any of the other commonly used classroom aids. The Society for Visual Education of Chicago, in conjunction with many other well known concerns in the visual field has been producing for many years, carefully planned and expertly photographed filmslides in such varied fields as geography, science, history, vocational guidance, archeology, anthropology, literature, art, music, and primary reading. In each of these fields of sub-

ject matter there is a wide variety of slides from which to choose. Many of them are accompanied by manuals for the use of the classroom teacher. A skillful teacher, however, does not lean on these manuals as a crutch but uses them only as a basis for her own ideas and ingenuity. After becoming thoroughly familiar with the content of the filmslides which she requisitions, the good classroom teacher will develop her own manual or method to meet her own specific teaching situation and will adapt her teaching to the needs and capabilities of her class.

CRITERIA OF GOOD TEACHING

I have often been asked by supervisors, and supervising principals how they can tell when a good lesson is being taught with the use of visual aids. My reply is invariably the same. "A good visual education lesson is taught as is any other good lesson. There should be a clear and challenging assignment, a work period filled with pupil activity, research and exploration, and a well conducted review period for the fixation of concepts developed during the lesson."

In developing visual aids lessons the teacher should observe the laws of learning just as in any other lesson; that is, the Law of Readiness, the Law of Exercise, and the Law of Effect or Satisfaction. Filmstrips may be used to advantage in any such learning situations. For instance, suppose that I wanted to study "The Temples and Architecture of India." How could I better set up a readiness situation for such a study than with the use of the filmslide, "India—Temples and Architecture"? I would not show all of these temples at the beginning of the unit but would show only the picture of the matchless Taj Mahal and tell the class the beautiful story of the dream of the Indian empress of such a temple of beauty, tell how the emperor sought in vain for an architect who could draw plans for such a temple and then of the appearance of the old religious devotee who saying, "I can help you to obtain what you seek," offered to one of the architects a mysterious drug, commanding him to drink. And behold! before his dazed eyes the wondrous temple was revealed in all its glory. His feverish work under the spell of the magic drug could be related, how he worked until the last detail was finished and then fell back exhausted, and finally the love of Shah Jehan for his beautiful empress, which inspired the completion of the building. After such a readiness situation it is pretty safe to assume that the class would be alive with eagerness to learn more of the temples and the beautiful stories about them.

Almost any filmstrip lends itself readily to an exercise or work situation. The modern school curriculum is taking more and more time for the development of its guidance program. The experi-

ence of vocational counselors has been that very few adolescent boys or girls really have any definite ideas about their future vocations nor do they know just what type of training or preparation is required for the vocations which they think they might follow. Fewer still know where such training is offered, what it costs, and what previous preparation is required. Their ideas as to personality traits, aptitudes, temperament and necessary character traits are equally vague.

The filmstrip, "Your Job," is a splendid basis for a series of work periods in an effort to assist the children to measure themselves, to search for materials that will help them prepare for their chosen careers, and to consider the needs for workers in the various fields together with the financial returns offered. Let us review this strip very rapidly. What are some of the ideas suggested? A group of Junior High school students in Birmingham responded with the following:

1. How can you discover your special abilities?
2. How would social qualities affect my career?
3. If a person spent most of his money on a career that he was not meant for, should he lose the money or go ahead trying to follow that career?
4. What bearing does the place where you live have on the job you choose?
5. Are alertness, courtesy, and manners more important than learning the work that your career requires?
6. Should you choose your career according to whether you like the work or whether you have the necessary qualifications?
7. Is it better to get information about careers from books, or from people who have followed such careers?
8. What does congenial mean?
9. Why should you prepare yourself for several different jobs in one field?

Finally how can a filmstrip be used in regard to the Law of Effect or Satisfaction? If the lesson has been well taught it will leave the student with a desire to pursue further explorations in that field or related fields. Just now we could use with telling effect such a filmstrip as "America as a World Power."

History is no longer taught in our schools from the standpoint of glorifying war and conquest, but on the other hand, is taught with the object of developing international peace and understanding. As in the field of its companion social science, geography, the best history teaching now tries to stress causal relationships, the interaction of events and causes.

In these days of tremendous struggle for world power between so many nations the skillful teacher can get a strong motivation for the study of such conflicts by using the strip, "America as a World Power." It depicts in vivid fashion the several ventures of our own country into the field of world power, and ends with a note of peace and understanding, using as a basis the Pan American Union. This strip tried out on the eighth grade at Barker School, Birmingham, Alabama, evoked the following leads for further study as suggested by the pupils themselves:

1. Why was Alaska called "Sewards Folly"?
2. Why did people think that Alaska was no good?
3. Why was the "Maine" in Havana Harbor?
4. What right did we have to interfere between Spain and Cuba?
5. Why did we have to send soldiers to Haiti and the Dominican Republic?
6. What do we get out of the territories that we have seized or bought?
7. What are some of the problems that our island possessions entail and what have we done to solve them?
8. How are these islands governed? Will they ever be states?
9. What does the Panama Canal do for us? How did it benefit the medical world?
10. What are some of the present problems in the handling of the Panama Canal?
11. Why was the Pan-American Union formed?
12. What is the present position of the United States in world affairs?

Are filmstrips authentic? Probably in no other types of visual aid has such care been taken to see that each picture is authentic and the latest contribution to be made in that particular field. From the far corners of the world expert photographers are constantly sending in thousands of pictures for consideration. Many are scanned but few are chosen. Those that are chosen are fully considered from every standpoint as to whether or not they have something definite to contribute to the development of the particular topic under consideration. Filmstrips are not products of theorists but are the work of progressive educators who are fully conversant with the needs in their particular fields. They are not breakable, will not crack in the projector and can be used over and over again with very slight wearing, if correctly used and carefully handled.

FILMSTRIPS ARE EASILY STORED

Very little space is required for their storage. They may be kept in small cans with the title on the top of the can where it is easily visible. It is unnecessary to thumb through long catalogs or slide boxes. Any filmstrip that is stored in a dry atmosphere over a long period of time should have a

piece of camphor gum wrapped in felt inserted in the box. This keeps the emulsion of the film soft and pliable and prevents brittleness and cracking. With such care in storage the average filmstrip will last for many years. Wide and comprehensive libraries in each subject may be built up during the period.

Another great advantage is the small expense of circulation. They do not require the use of a truck but great quantities may be carried in small cases in a car, or in some instances, it has been found advantageous to mail them for local distribution. The postage in most cases will not exceed one and one-half cents per roll.

One of the factors which has so widely popularized the use of "Picturols" is the ease and convenience of their projection. They are so simple to operate that children of elementary school age can very quickly learn to handle them, leaving the teacher free to do the actual teaching of the picture without any distraction of a mechanical sort or without having to compete with the noise of a projector.

Fixed Sequence

One of the valid objections to the use of filmstrips which has often been offered by classroom teachers is that the pictures on a filmstrip are arranged, in a fixed sequence which sometimes is not the sequence which the classroom teacher would like to use. Personally, I have found that in most instances sequences are excellent and very little could be gained by changing them. But in cases where the teacher would like to do so it is easily possible.

The filmstrip may be cut into individual pictures, these pictures mounted with mats and used as individual slides. In this manner the teacher can arrange her own sequences and may add to them slides made by herself or by the pupils with any of the ordinary types of candid cameras on either Kodachrome or black and while films.

Any field trip may be made much more enjoyable and productive if students are permitted to take along their candid camera and to make the pictures that they desire. When the follow-up period for the excursion is conducted in the classroom, students may show their pictures to the class and explain why they took them and how they thought such pictures would be used in the study of the particular unit under consideration. The class might then be permitted to vote on which pictures it considered to be the best. These could be used as a permanent record and a means of review for the field trip or unit.

Mr. Hugh Dale of the Science Department of the West End High School in Birmingham has used the above method with marked success in his biology classes. He has made in Kodachrome, pictures of practically every wild flower indigenous to the Birmingham district, has mounted them with mats into 2″ x 2″ slides and uses them regularly when teaching the wild flowers of this district. There is a keen competition on the part of the students to discover and photograph new flowers and as a consequence many helpful and productive hours have been spent in the surrounding woods and fields with the benefits in health and learning that are bound to follow such activity on the part of the student.

When I was a lad in the 7th grade of the Lakeview School in Birmingham, I became such an ardent admirer of my teacher that I used to spend my afternoons riding around the block on my bicycle, hoping to catch a glimpse of her working with the flower garden in her front yard. It never occurred to me to go into the garden and speak to her or to help her. The barriers that existed between pupils and teachers in those days were so strong that very few pupils had the temerity to try to break them down. Luckily, the situation now is radically changed. In the past few years there has been a marvelous improvement in the pupil-to-teacher, teacher-to-pupil, and pupil-to-pupil, relationships in the classroom. Under modern educational philosophy, the teacher is no longer a dominator or "Boss," but is a guide, a counselor and most of all, a true friend. Working together in common enterprises with the children has fostered such relationships. The preparation of home-made filmstrips is one of the best of such social undertakings.

Conclusion

We are coming more and more to realize that the whole child comes to school—not just his brain but his entire being, his hopes, his aims, his dreams, his ambitions. The skillful teacher knows that Dr. John Dewey struck the key-note to real educational activity when he stated that interest is intrinsic and that where interest is there will effort be also.

Every normal child as well as every normal adult is interested in pictures. Witness the astounding growth in "Look," "Life," "Click," and similar publications. When we have at our command limitless numbers of well chosen pictures that combine the factors of interest with good teaching situations we have an ideal set-up for challenging the effort of the child. We talk to him through the universal language of the picture, the "Esperanto" of the visual education world. I know of no other source that furnishes as many good teaching pictures as do these little strips of magic which so easily provide for the imaginative child a flying carpet to the far corners of the earth.   ❂ ❂ ❂

INTRODUCTION

While some schools seem to have forsaken still-projected pictures in favor of motion pictures, this is not the general trend. A series of good still pictures can increase the understanding and make more real a teaching situation. These are the major purposes for showing any films. Improvement in projectors to throw more light on the screen and to facilitate projection has increased the sales of projectors and the demand for more filmstrips and 2 x 2 slides.

Filmstrips and 2 x 2 Slides

By
WILBUR J. ROOK

In, The Principal and Audio - Visual Education. Washington: The Department of Elementary School Principals of the N.E.A. 1948. Pp. 44-50.

The filmstrip is actually a strip, like all 16mm motion film as used in theatres. The strip, like all 16mm motion pictures, is non-inflammable. It is usually from 4 to 6 feet long, depending upon the number of frames or pictures to be shown in the series. Each strip is made up of pictures placed in proper sequence to tell a story.

The filmstrip has two advantages over slides in general, either 3¼ x 4 or 2 x 2. First, the pictures are always in the proper sequence. Second, they can be changed without delay from one picture to another and as rapidly as needed. These features are especially desirable if the filmstrip has an accompanying record which carries the information about the pictures.

A great increase in the production of filmstrips since the war promises a wide selection of subject matter. There has also been a marked improvement in the quality of the pictures. Some strips consist of a series of pictures without titles and depend upon the teacher to read the information from a booklet furnished with the film. Each frame throws a small number on the screen to identify the picture with the script to be read. This is the older method and least desirable. The best and most recent method is to have a recording (record) used in conjunction with the projector so the story is narrated along with the pictures as they are flashed on the screen. Two other methods are used to carry the information intended by the producer of the film. One is alternating pictures with full frames of print to be read which tell the story of the next picture. The other and better method is to use a portion of the picture area to carry a message in as few words as possible. This is the most common practice and is sometimes done with accompanying recordings for emphasis.

EFFECTIVE USE OF THE FILMSTRIP AND 2 x 2 SLIDES

An important aim in elementary education is to direct the growth of each child to his maximum capacity. The well-rounded curriculum offers the child rich, creative experiences which encourage the greatest mental, spiritual, and social growth. The teacher brings to the classroom a wide variety of interesting, purposeful learning experiences which give the pupils every opportunity for fuller living and better learning. The filmstrip and 2 x 2 slides have unique contributions to make toward helping the elementary school fulfill this aim.

The filmstrip offers a means of presenting interesting visual material to a class. As in all good instruction, the teacher makes the material have life. She sets the stage for its use, adjusts it to meet the needs of the pupils, and supplements and follows through so that the children gain the maximum value from the filmstrip. The successful use of the filmstrip depends largely upon the ingenuity and skill of the teacher.

By careful selection one can find filmstrips to meet the needs of many learning situations. They can be used for creating readiness, for giving an overall picture of the unit, for a springboard to develop further related activities, for review, testing, and many other classroom situations. Teachers find that the same filmstrip may be used for many varied learning experiences, depending upon the manner in which it is presented.

The teacher should not be limited by a rigid adherence to the manual or to the printed captions on the film. If the teacher abandons the old lecture technique and encourages wide pupil participation, the lesson will naturally take on new life. She should encourage the children to discuss each picture freely, bringing the children's everyday experience into the picture. In the intermediate grades, pupil committees can present the filmstrip lesson very effectively with teacher guidance.

Build Your Own Filmstrip Library—The filmstrip is so inexpensixe that one may build up a very impressive selection in a short time on a limited yearly budget. Many teachers prefer to have a building collection of filmstrips; others have their own classroom collection. One of the greatest values of having your own library is that the filmstrips are available when you wish to use them.

Filmstrips may be purchased from many commercial houses. They are available for almost every subject: geography, history, citizenship, science, nature, health, safety, literature, language, art, music, and some phases of reading. Although there has been a dearth of good material for the elementary grades, particularly at the primary level, many companies are offering new and improved filmstrips which are better adapted to the special needs of the elementary teacher. These better features and new trends are evident:

1. There is a great improvement in the editing of the filmstrip.
2. The filmstrip is more sound educationally—better motivation, pertinent questions, improved captions, good exercises for review and testing.
3. The filmstrip is better adapted to the elementary pupil's interest, capacity, and understanding.
4. The filmstrip is more interesting. The pictures are more alive; they show people doing things.
5. The commentary is more closely graded to the children's vocabulary level.
6. There is much more material for the primary level, particularly in reading, language, safety, and health.
7. Moving picture companies are producing filmstrips to correlate with their films by showing a series of scenes from the film. These are so edited that they may be used independently or in conjunction with the film for motivation or for review.
8. Many filmstrips already listed in catalogs have been revised, brought up-to-date, and greatly improved.
9. More color filmstrips of good quality are available for schools.

Make Your Selection of Filmstrips Carefully—If possible, it is wise to preview all filmstrips and 2 x 2 slides before making a purchase. Several factors should be considered in making your selection of filmstrips. Do they meet the interest and experience level of the children? Is the continuity of pictures and commentary good? Is there good balance between the number of pictures, charts, diagrams or maps in certain filmstrips for science and social studies, etc.? Are the pictures interesting, pertinent to the subject? Is the material authentic and up-to-date? Is the photography clear and compelling? Are the manuals or printed captions well adapted to the best use of the filmstrip? Will the filmstrip do a better job of teaching than some other means of lesson presentation? How often will the filmstrip be used? How well does it correlate with the curriculum? Will it serve a worthy purpose in the classroom?

The Sound Filmstrip—The sound filmstrip employs the same type of 35mm film and projector but adds a transcribed commentary or other sound effects which are played on a turntable. The record is synchronized with the filmstrip so that the operator turns the proper frame into place at an audible chime, gong, or spoken signal. Some projector play-back combinations turn the proper frame into place automatically. Most of the records play at the rate of 33⅓ r.p.m. instead of the regular 78 r.p.m used on most commercial records. At this speed a full-sized record may play for fifteen minutes. The transcribed record makes it possible to have a good commentary, music or other appropriate sound effects to accompany the filmstrip.

The sound filmstrip is not as popular with teachers as the regular silent version. Some feel that it limits the spontaneity of discussion so valuable with the silent filmstrip. The audible signal is often distracting and the turntable combination is not common equipment in many schools because of the added cost. Occasionally the synchronization of the automatic projector is irregular.

In spite of these disadvantages, however, the sound filmstrip has a definite place in the elementary classroom. As with the sound moving picture, it offers certain valuable learning experiences not possible with the silent film.

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S. STEREOGRAPHS

The stereograph is generally spoken of as a three-dimension photograph. The facts are that the stereograph is a double photograph, two pictures made by the stereoscopic camera from a slightly different point of view, which are enlarged and merged into one view by the lenses of the stereoscope. The total result is very similar to that brought about by the optical and mental reaction which gives us one view of an object through the use of two eyes. A stereographic view seen through the stereoscope, then, should give the looker an illusion of approximately that same depth and relationship in space which he gets from the use of two normal eyes looking at actual objects from slightly different angles.

The Stereograph in Education

By
GEORGE E. HAMILTON
In
The Stereograph and the Lantern Slide in Education
Meadville, Pa.: Keystone View Co., 1946. Pp. 3-24.

THE STEREOGRAPHIC PICTURE INDUCES A FEELING OF REALITY

This illusion of space relationship gives the looker a very important impression of reality. When we visualize a thing that we have seen or endeavor to visualize a thing that we have not seen, three facts are important.
1. What is its shape—its relationship in space?
2. What is its color?
3. Does it have motion, and if so, what is the character of this motion?

Very few would deny that the first of the above-mentioned considerations is the most important. If we were visualizing an orange, an elephant, or an airplane, the first and most fundamental essential to an understanding of any one of these things would

be its shape. Change the shape of any of these things and you have lost the identity. At the same time, any one of them might be a different color or move in a different way and still be an orange, an elephant, or an airplane. It should be easy to see, then, that when you bring to a student an approximation of the correct shape or relationship in space of a thing or a situation, you have brought to him the most important element that can contribute to impressions of reality and of fact.

A Strong Impression of Reality Induces a High Level of Interest

What, then, is the significance of a strong impression of reality when one looks at a picture? When we are impressed by any picture, we are wont to say that it is lifelike. We like lifelike pictures. The significance of the reality brought to the looker through the stereoscope is that, through the strong impression of reality that he gets, he elevates himself to a high level of interest in the pictured situation, and is, therefore, put in a learning frame of mind . . .

An illustration. A small boy was shown a stereograph of a cacao tree. Instinctively he reached back of the stereograph to see whether he could touch the cacao pods or the limbs of the tree that seemed to be spreading toward him.

Another illustration. A child was being shown a stereograph taken from a rock looking across a canyon. With great suddenness, as the picture came to him, he shrank back from the apparently yawning precipice . . .

One of the outstanding developments in modern education is the emphasis of the importance of interest on the part of the learner. The value of the use of stereographs, therefore, in connection with definite teaching objectives, cannot be overestimated. Their relative inexpensiveness, the ease with which they may be used for individual study, and their practical indestructibility make them a most desirable type of aid in the hands of the modern teacher and educator, who appreciate the importance of developing education along the lines of interest and understanding, rather than by rote learning and by the mere memorization of statements of facts.

Stereographs Are Essentially Individualistic Teaching Aids

The stereograph is by its very nature a thing for individual use. Only one person can look at a stereograph at a time. When the pupil covers his eyes with the hood of the stereoscope, he is, for the time being, shut out from the world about him and transported to the world shown in the stereograph. Distractions about him and the presence of his fellow students are forgotten. He sees only and thinks only of the people crowding Trafalgar Square; the gold miner in South Africa, creeping through the seventh-level vein with his automatic drill in hand; or the great combine plying over the hills of western Oregon . . . The teacher who says that it takes too much time to use stereographs is thinking only in terms of group instruction. He needs help in modifying his techniques to meet the requirements of modern pedagogy that individual research and activity be stressed . . .

Methods of Using Stereographs

As a matter of practice, there are three ways of getting stereographs to pupils for their individual use. In the modern platoon school with a library and a librarian in charge, the stereographs naturally take their place with library books and all other reference materials. This is, undoubtedly, the ideal method of using stereographs and the method that will ultimately become universal.

In schools, however, where all such materials must be handled by the room teachers, two possible methods of using stereographs are in common practice. Some teachers like to have in their room a reference table to which pupils may be at liberty to go as they may have use for the reference materials available. Every reference table in such a school should have as its permanent equipment one or two stereoscopes and a collection of third-dimension views appropriate to the subject matter being pursued at the time. If a project on Indians is being worked out, then a selection of views of Indian life is appropriate. If the New England States are being studied, then a selection of stereographs of New England on the reference table will enable the children to *live* in New England as they pursue their study of this section.

Other teachers find it simpler and more effective to have stereoscopes, preferably one or two or on occasion more, passed around the room from hand to hand during the study period. In this method, there is probably less confusion and more certainty that every pupil will see the stereographs selected to coordinate with the subject matter under discussion. In a room of forty, while one pupil is looking at a collection of views, the remaining thirty-nine are going ahead with their individual reading or study.

By any of the methods suggested above, the pupils of a room, during the progress of the study of that unit, may examine again and again the twenty-five or more stereographs included in a selection to be used with a specific unit. They will never tire of the marvelous insight into the questions that may arise daily in connection with their reading and in

the group discussions of subject matter of the unit which each use of the stereographs will give them.

THE POSSIBLE EDUCATIONAL VALUE IN THE USE OF STEREOGRAPHS

Stereographs have three important uses in the work of the modern school. In the first place, through stereographs it is possible to bring to the pupil very vivid knowledge of subject matter entirely beyond his experience. He may never have seen a mountain, he may never have seen a giraffe, or he may never have seen a cotton field. He may never have seen a bee at close quarters or understood its function in flower pollination. These things, however, when seen through the stereoscope, come to him as very nearly real experiences. He is thus put on a par with the more fortunate child who has been able to travel and whose life has been enriched by firsthand contacts with the many facts of the world.

Another important use of the stereograph, and a very valuable aid to effective teaching, is to re-create in the understanding of the pupil subject matter within his experiences but not at the moment clearly in mind. People who have traveled a great deal buy a great many stereographs for their home libraries. Why? Because looking at these stereographs brings back to them, vividly, happy and valuable experiences, and makes them relive important and interesting episodes of their travel . . .

A third important possibility in the use of stereographs is that of re-creating for a group of pupils, in common form, some experience with which all have had varied individual contacts. By bringing common experiences into one definite expression, vivid backgrounds for meaningful activity are laid. For example, all children come from homes of some sort or other. These homes are not all alike. They are not occupied by the same number of people or by exactly the same kind of people. Each one is different from every other one, and yet there are common elements in all of them. In this situation, then, the stereograph may be made to play a very important role. Take, for example, a stereograph made of a living room occupied by the family, each of whom is engaged in some plausible activity. The vividness and implicitness of the stereograph make it of wonderful value in bringing to a number of children in a vivid way a re-creation in definite form of their common home experiences. Here we have a splendid opportunity to develop an activity program backed up by common knowledge, which has been crystallized into definite form by the common use of a single stereograph.[1]

As modern educational psychology more and more influences the practices of teaching, the general me-

chanical and technical aspects of the use of stereographs become less and less important. The fundamental fact in connection with the use of stereographs is that it must be individual and it should be informal and always for the purpose of aiding the pupil to understand text material which he is reading or educational subject matter which he is preparing for presentation to the group . . .

The bane of oral and written composition work in schools has long been the practice of asking pupils to speak or write on subjects beyond their understanding and beyond their interest. Everyone knows the importance of concrete interest as the basis for self-expression . . . Subjects for composition work are assigned which lead the pupil to present, in a purely mechanical way, facts which he has cribbed from some library book or other source and which he does not himself understand or care about. This sort of composition work is vicious and defeating to the whole cause of education. It is here that the stereograph, by furnishing vivid impressions of reality, can enable the teacher to have presented in pupil compositions real thought stated by real students in real language. Such pupils will show the happiness and the ability of that delightful public speaker who really has a message to give, a message which he understands in all its implications and which he, therefore, gives well.

This part of the discussion should not be left without referring briefly to a fourth possibility in the use of stereographs. It is possible to make two drawings which, when brought together by the stereoscope, show third dimension in figures that imply third dimension. Students in solid geometry are often helped a great deal in seeing the reasonableness of propositions and discussions otherwise meaningless to them.[2]

THE MECHANISM OF THE USE OF THE STEREOSCOPE

The mechanical aspects of the adjustment of the stereoscope to the individual child's eyes are of relative unimportance. Any authority on eyes knows that children's eyes readily adapt themselves to the use of any approved modern stereoscope. Too many teachers whose eyes do not readily adjust to stereoscopic fusion—a difficulty which is common to a very large number of adults and often indicates the need of glasses or a correction of glasses worn—attribute their own deficiency to the children under their direction. The facts are that children's eyes are very adaptable and normally adjust themselves to the stereoscope without difficulty. The rare excep-

1. See *Teachers Manual for Keystone Visual Reader, Book One*, pp. 7 to 10.
2. See "Seeing Solid," (*Technology Review*, March, 1927.)

tion is the child who has developed an advanced eye difficulty, which may lead later to permanent disability unless the immediate attention of an eye specialist is secured.

In the use of the stereoscope in the schoolroom, it is not necessary to endeavor to adjust the crossbar for the eyes of each child. If the crossbar is placed about the middle of the extension, every child's eyes will adjust instantly and see perfectly unless, as stated above, he has already developed serious eye trouble, which should at once have the attention of a specialist.

THE HYGIENIC ASPECT OF THE USE OF STEREOGRAPHS

There is an important hygienic aspect to the use of stereographs in education. Stereographs have been used for some time by the eye specialists for the diagnosis of anomalies of vision, particularly of the faulty-fusion type, and in remedial work for the correction and arrest of such conditions. The soundness of these practices seems to be very generally accepted and they are now endorsed by ample authority.

To understand the hygienic aspect of the use of the stereograph in relation to eyes, a word concerning the basic principles of human vision is in order. Normally our two eyes are well matched and in perfect coordination. Each eye is conditioned upon the action of the other. When looking at an object, not only one eye but both eyes must focus on the object, and each must point precisely at it. The visual axes, when looking at long distances, are practically parallel. When looking at nearby objects, however, the eyes turn and point instantly and precisely to the object of regard. Normal eyes have no hesitancy in either the focusing or the pointing action.

Much scientific research has been given to the proper construction of the modern stereoscope and stereoscopic photographs. When the stereograph is placed properly in the holder and moved as far away from the eyes as possible while still maintaining sharp distinct focus of the picture, the eyes of a normal individual feel at ease. The delicate muscles that perform the focusing functions, as well as those muscles that control the movement of the eyes, are given refreshing relaxation, while the function of coordination are given mild but positive stimulation. The use of the stereoscope provides recreation for tired eyes, just as the dropping into an easy chair gives rest to tired feet and legs.

Seeing, however, is a learned function. We are not born with sharp vision and coordinated eyes. We acquire these accomplishments. Many children, upon entering the first grade in school, have not yet learned to use their eyes together in an efficient manner. With such children the work of reading often tends to disorganize powers of coordination. Many of our best authorities believe that the use of the stereoscope and stereograph tends to counteract these deteriorating tendencies, and not only helps maintain normal functions of fusion and coordination, but assists in developing the re-establishment of these functions where they have been partially lost . . .

B. W. Kelly, in an article published by *The Educational Screen* of September, 1932, entitled "The Doctors Say Use Stereoscopes," says: "It thus appears that the daily use of the stereoscope by all children between the ages of five and twelve during which period the fusion sense is being developed would result in positive eye betterment for all. It would relieve and strengthen those eyes which are considered normal. It would assist many to obtain fusion ability and it would point out for further assistance from the eye specialist those who are unable to interpret properly and comfortably the stereoscopic pairs of views."

Closely related to these developments of thought concerning the value of the use of stereographs by eye specialists has been the more recent investigation and conclusions by educators concerning the relation of inefficient vision, particularly poor binocular skill, to difficulties certain children in school encounter in learning to read well.

Dr. Emmet A. Betts of Temple University, pioneered the adaptation of special stereograms to the testing of the vision of school children. A series of tests was developed and is now distributed under the title "Keystone Visual Survey Tests." These tests are being used by most of the leading school systems of the country. An interesting outcome of these procedures has been the development of a feeling among educators that, although the serious cases must, of course, go to the eye specialist for attention, there are many children with faulty tendencies not serious enough for the eye specialist, who would benefit greatly by the daily use of stereographs. A further growing conviction is to the effect that, should children have the opportunity of using stereographs daily, many of the unfortunate developments of poor vision in later adult life might be averted.

ORGANIZATION OF STEREOGRAPHS

It seems hardly necessary to emphasize the fact that a large collection of stereographs, as well as such a collection of any other sort of picture material, must be well organized for use by the teacher. Teachers have neither the time nor the inclination to search through large, unorganized collections of material for the subject matter needed for the day's work. To presume that teachers can and will do this is a

sure way to defeat the use of a collection of stereographs in the school.

During the early years of the use of stereographs in education, commercial firms spent a great deal of effort and money in the organization of sets of stereographs in large library sets. For years we heard of "600" Sets and "300" Sets, with their elaborate editorial comments and their thoroughly worked-out indices of subject matter in the collection of stereographs.

From a library point of view, the teachers' guides for these sets and the stereographs they described so well were excellent. This perhaps was their greatest weakness. They presumed that the teacher had both the time and the training of a librarian. He was expected to find in the guide, particularly in the index, references to stereographs that might fit the problems of a particular subject. Then he was expected to go, usually to the principal's office, and pick out from the large collection the particular numbers referred to. Then, after he had finished with the pictures, he was supposed to go back to the cabinet and carefully refile these numbers in their proper places. Simple as all this sounds, teachers, in most cases, found it very difficult to follow out this routine. The set of stereographs in the cabinet usually got out of order, making the carefully worked out index in the teachers' guide referring to pictures by number worse than useless.

More recently there has been a tendency to simplify this problem of organization and the related problem of the teacher's use of third-dimension pictures. Small groups of stereographs are now being made up on units of work or projects that may be taken up by the teacher. Such collections are sometimes worked out by an individual school system for its own use. In most cases these groups, covering units of work common to many schools, have been assembled and provided with teachers' manuals by commercial firms . . .

In general this organization of stereographs into groups, which correspond to the major divisions of subject matter taken up by the modern school, seems to go a long way toward solving mechanical aspects of the organization of large collections of stereographs for ready and easy use by the teacher.

The Collection of Stereographs and the Course of Study

Whether the school has a large miscellaneous collection of stereographs or smaller groups well organized along the unit idea, it is most essential, of course, that the material be considered in connection with the local course of study.

Many of the best school systems have gone into this matter in a fundamental way. A survey has been made of the stereoscopic collection available, either in a central library or in the various schools, and appropriate references to these stereographs have been included in the published course of study. In so far as the course of study is made practical and of use to the teacher in his daily-lesson plans and in the progress of his work, the value of such references cannot be overestimated. A careful survey has convinced the writer that listing in the course of study the stereographs available in any school system will do more to encourage their effectual use by teachers than anything else of a supervisory nature that can be done.

How Can Teachers Be Stimulated in the Use of Stereographs?

And now a final word to the instructor or visual director who wishes the teachers under his direction to make enthusiastic use of the collection of stereographs or to the teacher who himself is sincerely interested in using stereographs.

When a collection of stereographs is purchased for the school, the first thing which the wise supervisor encourages on the part of every teacher is that he go to the cabinet and, using the stereoscope, look at every stereograph included in the collection. Once he has done this, he will never again attempt to pass on the value of the stereograph for any particular objective he may have in view by merely holding up two little pictures and looking at them without the stereoscope.

Stereographic pictures are small and hopelessly inadequate when viewed merely by the naked eye. It is the stereoscope that makes them live in reality, not only for the immature pupil but for the mature teacher as well.

The teacher, now having first-hand knowledge of the interest and value that attach to the individual pictures in the collection, will be ready to provide for the mechanical manipulation of the stereoscope and the daily use of stereographs in his work.

The teacher who is interested in his work, and most teachers are, will feel himself growing as he develops the use of stereographs in his work. He will begin to appreciate one of the outstanding weaknesses of modern American life — satisfaction with superficiality. He will develop a higher regard for opinions based on adequate information. He will see the difference between vague, half-developed impressions as contrasted with definite, clear-cut ones. He will himself refrain from guessing and bluffing and more easily discern guessing and bluffing on the part of his pupils.

Will the stereograph do all this for the teacher? It will certainly help. The stereograph belongs in

the world of fact and reality. It engenders thoroughness, respect for truth, and habits of correctness. The teacher who uses stereographs daily and who looks at streographs daily will be helped immensely in the attainment of that common desire to achieve a high and merited reputation for sincerity and effectiveness. The influence of the use of stereographs on the attitudes of the teacher is in itself a complete justification for their use.

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T. TACHISTOSCOPES AND THEIR USE

The tachistoscope was originally developed as a device for accurate measurement of the span of apprehension. Sir William Hamilton, in 1859, did the first crude experimental work on the problem of the number of objects that could be perceived at one glance. Up to that time the problem had been considered one of a philosophical nature and had been disputed. Hamilton exploded the existing theory of a fixed span by showing it was a matter of individual differences. The first step toward experimental control was taken by Jevons in 1871. For the purpose a number of black beans were thrown into a small box. The moment the beans came to rest, the subject was to estimate their number. Jevons' results showed a steadily declining curb in apprehension span as the number of objects presented was increased.

The Tachistoscope

By
GEORGE E. HAMILTON
Meadville, Pa.: Unpublished manuscript, Keystone View Co., 1952. Pp. 10.

The principle of the tachistoscope was first employed for the purpose of discovering how brief a stimulus could arouse this sensation. In 1895 the apparatus was adapted by Cattell for use in span and reading experiments. It was Cattell who laid the groundwork for both experimentation and training in the field of reading and reading problems. Dodge, Kutzner, Fernberger, Freeman, Glanville, and Dallenbach have all contributed work to various phases of the problem.

Miss Catherine Aikin, teacher in a private school for girls at Stanford, Connecticut, wrote a book in 1895 that created much skepticism and controversy among psychologists and educators. She had become greatly disturbed about the fact that her students seemed unable to use their minds properly, and in her book she advocated a method of instruction to provide this training. Her basic assumption was that ambition and a desire to excel would lead toward stimulation of the mental activities and permit one to concentrate his attention sufficiently to insure retentive memory.

The method she advocated involved the use of a revolving blackboard upon which materials could be placed for observation, and then the observer repeated what he saw on the board. She claimed that it was possible to place a series of numbers on one side of the blackboard, expose them to her class for three seconds, and then ask the pupils to repeat the numbers after multiplying, dividing, or extracting the cube root of each number. Use was also made of circles, algebraic formulas, unfamiliar words, parts of a sentence or paragraph, bars of music, various line lengths, and models to be used in drawing. This mind-training exercise was given for twenty minutes at the beginning of each morning's work.

In spite of the fact that many persons expressed doubt as to the validity of her claims for the method, one can see in it the background of many of the present-day aspects of tachistoscopic training. She was concerned primarily with the development of habits of quick perception, accuracy of perception, and ability to discriminate quickly.

Prominent among contemporary psychologists interested in tachistoscopic training is Dr. Samuel Renshaw of Ohio State University. Because of his interest in the field of recognition training, the Navy Department requested that he establish a program of tachistoscopic training in aircraft and ship recognition for service personnel in World War II. This training proved impressive to the naval authorities and was continued by the Navy throughout the war.

The Keystone View Company ran its first study on the use of the tachistoscope in the teaching of reading in the Harding School, Erie, Pennsylvania, during the winter and spring of 1938. Since that time there has been a constant development of equipment, materials, and methods of use of the tachistoscope in education.

The first great advance in this project came with the development of the Keystone Overhead Projector. This made possible the use of multiple exposure slides instead of using an entire slide for one word, phrase, or number as was necessary in the conventional type of slide projector, whether for standard or for two-inch lantern slides. It now became possible to print from sixteen to eighteen and later forty exposures on one slide, each exposure appearing on the screen at exactly the same spot when flashed. Up to the time of this development the use of the tachistoscope dragged. The expense of hand making and buying 1000 or more slides, which seemed to be a minimum necessity, seemed prohibitive to buyers; and where such a collection of slides might be secured, its filing and use were cumbersome and forbidding.

THE PRIMARY PURPOSE OF TACHISTOSCOPIC TRAINING

The tachistoscope[1] is primarily a device for perceptual training. A tachistoscopic flash on the screen may be defined as a flash that does not permit eye movement within the object or objects to be recognized. It is generally accepted that such a flash must be 1/5 of a second or less in duration on the screen.

It is obvious then that a tachistoscopic flash is something entirely different from the exposure of flash cards by hand. It would hardly seem possible that anyone could expose a flash card within the time limit given above as tachistoscopic.

A fundamental difference between perception as it occurs in connection with the use of a flash card and perception as it occurs in the case of a tachistoscopic flash is that perception is likely to occur while the flash card exposure is in view, whereas in the case of a tachistoscopic flash perception necessarily follows the flash. It is important, therefore, in the first steps of tachistoscopic flashing that the student be instructed to hold this vision on the spot where the flash occurred until he is able to reconstruct mentally the entire form or group of forms to be recorded. At first the period between the flash and recognition may be relatively long. As training proceeds, this period is shortened until the trained and skilled tachistoscopic observer may bring the point of recognition up very close to the point of flashing.

Another very important aspect of tachistoscopic seeing is that the observer will see the subject matter flashed as a whole and not in parts. This has sometimes been termed holistic seeing. In the recognition programs conducted for pilots and other personnel in the Army and Navy during the last war, it was observed that when a student was able to recognize a plane in 1/100 of a second he could usually reconstruct the plane with amazing accuracy in all details. In fact, this was an essential aspect of the training since the close similarity of some American and certain enemy planes made it important that a pilot flying at high speed and meeting a plane coming toward him at high speed be able to recognize instantly and accurately small differences that might designate the plane as either a friendly or an enemy plane.

In the use of the tachistoscope in teaching spelling, a similar fact has been observed. When the student can recognize in a flash of 1/100 of a second a difficult word, it has been observed that he usually will be able to spell that word correctly. In the case of large numbers likewise it has been observed that when a student can name all the digits in the number he usually is able to record those digits exactly in the order in which they appear on the screen, whereas in the case of slower exposures the student frequently can name all the digits but will give some of the digits out of order.

A third important possibility of tachistoscopic training is the enlargement of the operating form field of the observer — the extension of the form field of the observer to take in a large territory. The extension of the form field of the observer may be in no sense a physical phenomenon but is probably purely perceptual. It would seem reasonable, therefore, that the form fields of various students might be developed but with different possibilities. The most obvious indication of this possibility is the extension of a student's possibilities in the recognition of large numbers. Most people can recognize immediately four digits in a flash of 1/100 of a second. A fair number of people can recognize five digits on the occasion of their first experience with the tachistoscope. A few can recognize six digits. But after a period of training, let us say fifteen minutes a day for six weeks, most of these students will be able to recognize double the number of digits they were able to recognize at first in a flash of 1/100 of a second. What has occurred in the meantime must be in the nature of the development of visual perception. The form field of the student has been enlarged and in general he will see more of any design on the screen or be able to read at a given flash a larger number of digits or a longer phrase on the screen than he would have been able to reproduce at the beginning of the training period.

It would seem, therefore, that the place of tachistoscopic training in the schools is basic. Whether the student is being taught the elements of design in art, to be a more effective reader, to become a better speller, to read music faster and more accurately, or to increase his speed in typewriting, what tachistoscopic training is doing for him is to provide him with better perceptual skills so that normally whatever he does in any of these fields is done, as training proceeds, with greater accuracy . . .

APPLICATION TO THE READING PROBLEM

Educators have long recognized the importance of adequate visual functions in good reading. The student cannot be expected to read something that he cannot see at all or that he cannot see well. Even the myope, who is often referred to as an exception to the statement that good vision is related to good reading, can well be said to have good vision for reading. His visual difficulty is merely one of seeing or reading at distance. In general it would seem

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1. The modern tachistoscope is a device similar to a photographic shutter which is attached to the lens of a magic lantern. It permits the operator to flash or expose targets on a screen at varying speeds.

that basic functions of seeing would be necessary to the rapid perception required in the use of the tachistoscope.

It is generally conceded that rapid reading and effective reading go together. If our assumptions presented above are correct, the student who is able to see a phrase and read phrase after phrase in tachistoscopic timing will not only be getting quick perceptions of such phrases and, therefore, reading rapidly but will likewise be getting accurate information from what he reads. From tachistoscopic training he will enlarge his form field and thus be able to increase his span of recognition and, therefore, the length of his phrasing as he reads. Thus the student becomes a more rapid reader with an equal or better index of comprehension.

The statement has been made by many users of the tachistoscope that all students should have tachistoscopic training. These students may be divided into two classes. First, there are those students who either because of their initial steps in learning to read have not acquired correct basic skills or have acquired certain wrong habits of reading or because of some emotional or psychological factor are poor readers. Tachistoscopic training has been found very effective in aiding both these groups to become good readers. Such training is usually designated as remedial-reading training.

The second class of students who may profit by tachistoscopic training are all others. These students have, let us say, fairly correct reading habits and have no emotional or psychological blocks to good training. However, the use of the tachistoscope, especially in the lower grades, where reading habits are being formed, will presumably make of these students faster and better readers. In many cases the reading rate sometimes with no other device involved has been doubled . . .

Tachistoscopic Techniques

In using the tachistoscope for perceptual training, it is important to observe carefully four steps in the exercise:

1. The group should be prepared for the material that is to be flashed. They should not only be told its nature — that is, whether it is a picture of a plane, a word, a phrase, or a certain number of digits — but the place where the projection will appear on the screen should be clearly located. Then the instructor should say something like "Ready — one, two."
2. The flash.
3. The student should be instructed to wait a brief time and then try to reconstruct a mental image of the picture or subject matter flashed.
4. Then he is ready to check on his work sheet, write down, draw or repeat orally the things that he saw.

It is very important that the instructor observe these four steps as separate from each other. The results will undoubtedly confirm the wisdom of having done so.

Start with slow flashes when necessary and gradually build up to a flash of 1/100 of a second. Then do all further training at this speed unless otherwise indicated in specific situations.

It seems reasonable, also, to begin with nouns, since such words out of context have a large factor of meaning to aid in recognition. Next go to Dolch's sight words, which when standing alone have less meaning than nouns. Then flash phrases — which have a high ratio of meaning — to help cover a wide span. Finally flash numbers — which are low in meaning — thus placing a high requirement on the visual recognition of form.

In the case of young children who do not know letters or numbers, or of illiterates, outline pictures of animals or geometric figures may be used.

The Three Stages of Tachistoscopic Perception

It is important that the instructor thoroughly understand the three stages of tachistoscopically controlled perception.

1. The first stage is the period of preparation. One learns in proportion to his preparation for learning. Both the student and the instructor should thoroughly understand the following conditions prerequisite to high achievement:
   a. He must want to succeed.
   b. He must be "set" to reach out for the impression as if he were going to grasp it with his hands.
   c. The total body posture must express "readiness," because posture affects the response.
   d. The mental attitude must be one of eager alertness.
2. The impression period begins at the instant of exposure and extends to the point where the imagery has attained mental reproduction. This period of reception and interpretation lasts at first from three to five seconds. As learning proceeds, the necessary interval becomes less and less until finally interpretation follows reception instantaneously. Any overt activity during whatever interval is necessary will greatly hinder the process of recall. The student should not attempt to record until he has a mental picture of what he saw on the screen.

3. The response period is the interval necessary for the completion of the motor (efferent) activity following perception, just as the impression period is that of the sensory (afferent) and organizational (integrative) phases. The response period consists of giving form oral or written, to the thing perceived.

The motor activity required for the recording of the response should be as nearly as possible automatic, that is, it should be accomplished without conscious attention, in order that the integrity of the recall may not be impaired. If attention is focused on the mechanical execution of the act of recording, the impression may be blurred or erased.

Hence it is important that the manner or recording involve only the use of well-established skills. For example, if the writing skill is so low as to demand special attention for its execution, it may be better to have the student report orally, or vice versa.

Recording Responses

The activities involved in recording the response produce effects significant for perceptual achievement. When the student writes "1 3 6 4" in his notebook after seeing these numbers on the screen, several things happen.

1. He visually perceives the numbers a second time. This acts as a repetition of the original stimulus and confirms and reinforces the mental percept.

2. The muscular tension consequent upon recording the numbers sets off discharges in the proprioceptive receptors located in the participating muscles. These neural discharges act as efferent stimuli and contribute to the reinforcement of the mental imagery, constituting, in effect, a sense of touch, permitting the subject to "feel" the numbers.

3. This process of "feeling" involves co-ordination of the sight and touch continua, and is an important factor in all learning situations.

4. Granting that the requisite mechanical skill, oral or written, is present, the manner in which the recording is done becomes informative of the accuracy of the mental reproduction. If perception is unitary, that fact will be evidenced in the facility and preciseness of the recording act. If there is vacillation, hesitation, or fumbling in the recording, such manifestations reflect what took place in the brain.

5. Likewise when the report is given orally, the same effects are produced through the proprioceptive receptors located in the vocal and auditory organs, and rapport is established between the visual and auditory senses.

Preliminary Instructions to the Student

The preliminary instructions that you gave the student will determine to a large extent, the failure or success of the training session. The following instructions should be carefully observed:

1. The student is to be mentally alert and not muscularly tense.

2. The student is to be seated so that he can maintain a normal posture, with both feet on the floor and bending slightly forward. The postural set should be toward the screen.

3. The student is to be supplied with a notebook in which he may record the results of all exposures. He is to record the correct material opposite any erorr so that he may observe the type of error he has made.

4. He is to be instructed to observe but not to attempt to read the material during the impression period, either silently or aloud. All postural movements should be eliminated just prior to, during, or after the flash. Eye movements or postural movements performed too quickly after an exposure will tend to create errors.

5. He must be instructed not to start recording his observations too soon after the exposure but to allow a waiting period of from three to five seconds before recording.

6. The student should be made thoroughly familiar with the procedure of recording and rating his observations. It is customary in grading tachistoscopic training with digits to allow one point for each correct observation and one-half point if all digits of the number are correct but two of the digits have been reversed.

7. The student is to be shown by a trial flash the exact location of the proposed flashes on the screen. A fixation target should not be used.

8. He is to be instructed precisely as to the content and length of the material to be presented. For example, "Now we shall flash a number that has five digits."

Viewing Heights and Angles

The material should normally be projected at the height of the student's eyes.

A viewing angle of more than thirty degrees is not desirable. The following table gives the maximum displacement of the student from the line of projection (an imaginary line drawn through the instrument to the projected point on the screen) in order not to exceed the thirty-degree angle of viewing:

Distance of Patient from Screen (in Feet)	Off Central Distance of Patient (in Feet)
5	3
10	6
15	9
20	12

FACTORS IN PROGRESS

A sense of frustration should not be allowed to develop. Nothing is more inimical to progress than the feeling that "I know I am not going to get it right." Success, on the other hand, creates confidence.

"In any learning enterprise the assumption of a defeatist attitude actually sets in motion the postural and implicit movements which conduce to erroneous and failing acts."—Renshaw

It is therefore of first importance to present material that is not beyond the student's present capacity. If, for example, he can get five digits but cannot get six in 1/100 of a second, reduce the speed, or exposure time, until he can reproduce correctly the higher number of digits. Then gradually increase the speed to 1/100 of a second without informing the student of changes in exposure time.

The jumping digits are most effective in raising the achievement level. Their use will markedly accelerate progress.

Let us again stress the importance of keeping all stimulus demands within the student's ability to achieve. Speed follows correct reproduction in all forms of training. Avoid, as much as possible, wrong responses.

LENGTH OF TRAINING PERIODS

Neither in the school nor in the eye specialist's office should any training period be extended to the point where the students are fatigued or show lack of interest. Experience has shown that a training period of from ten to fifteen minutes usually provides sufficient time in which to achieve desired results and, at the same, time, does not go to the point of frustration and defeat . . .

RECORD RESPONSES

In the group training the only practicable method is for each student to keep a written record.

The record should be permanent so that progress may be checked periodically. The student's interest is also heightened if he is allowed to keep a complete record. The record should include the date, the speed of exposure, and the number of letters, words, or digits projected. Complete, informative records are important — to the student as a source of instruction and satisfaction, to the instructor as a measure of progress and the effectiveness of procedures employed.

U. TELEVISION

About four hundred years ago Shakespeare anticipated television when he wrote in *Troilus and Cressida*:

The present eye praises the present object:
Then marvel not, thou great and complete man,
That all the Greeks begin to worship Ajax;
Since things in motion sooner catch the eye
Than what not stirs.

Television and Education

By
EDGAR DALE

But prophecy about television for even the next ten years is hazardous, and bad guesses about radio some twenty years ago, make many persons cautious about new prophecies. We may claim too little rather than too much.

Fortunately we have a good deal of information on the effect of sound films on the education of children and young people. If television is as powerful as movies (and it might be more powerful), it can do these things: (1) change attitudes and values, (2) increase information, (3) help people learn new skills.

There is a close parallel between television and the comic strips. Those persons who are puzzled by the great popularity of the comic strips are failing to draw a simple conclusion. Comic strips are "read" because they are personal, concrete, and real. They are not impersonal, abstract, and unreal. Television too is personal, concrete, real. Make no mistake about it. Television is going to have a tremendous effect on education, science, and culture.

We all remember the old arguments about showmanship in radio education. But showmanship has new meaning as far as television is concerned, since Webster defines a showman as "one who is adept at exhibiting things to advantage." Showmanship is described as "skillful display." "To show" means "to place in sight," also "to perform by way of demonstration."

Our society has been producing excellent ideas much faster than we can distribute them. We have developed and used lots of ideas to improve technical competence, but have lagged far behind in improving social competence. Through television we can break the log jam, decrease the distance between technical and social competence. We can "adeptly exhibit" or "skillfully display" any idea that we wish.

For example, think what this means for the education of farmers. The United States Department of Agriculture has discovered that most farmers get their ideas from friends and neighbors. I think this merely means that in this way they "see" what has been done and how it has been done. They have

been shown and were not merely told through a bulletin or a piece in an agricultural paper. Good educational and television advice is found in the slogan, "Don't just tell them. Show them."

There are two reasons why we don't farm, or administer, or write, or teach better than we do. We don't want to, or we don't know how. And often when we don't know how, we say we don't want to. If we're not *up* on bridge or golf or contour farming or methods of making our work more efficient, we tend to be *down* on these ideas.

We have talked a good deal in the past about *know-how*. Now through television we can add the *show-how*. We need still another ingredient—the *want-to*. What are the possibilities of television here? Certainly films have shown that they can reach people emotionally. So can television. Television can then not only provide the know-how, the show-how, but also the motivation, the want-to.

What about schools and television? Some people say that television is too expensive for use in schools, that we can't even adequately support the schools we now have. One reason why we can't get adequate support for schools is that the taxpayers do not know what a modern school is. How many people selected at random in your home town could give even the simplest and most elementary description of the modern way of teaching reading all the way from the first grade through high school? Such material on a television screen will cause persons to ask, "Why doesn't my boy get that kind of teaching?" It may also cause some parents and pupils to say, "Why doesn't our teacher teach that way?"

Good education is not cheap, but we could have television in every school in America if we only saved the billion dollars Herbert Hoover has told us is being wasted each year by the armed forces. Let us not forget that Germany in 1936 had a movie projector in about one-third of her schools. If Germany could afford motion pictures then, the United States can surely afford television now.

Television has many possibilities for parent education in health and child care. Think what it means now to be able to televise for parents such films as "Feeling of Rejection," "Feeling of Hostility," "Problem Children," "Children Learning by Experience," etc. In many cases older children can see the films with their parents. You may have noticed the quip in the *New Yorker* about the parents owning television sets who now long for the good old days when they didn't know where their children were.

Why was the story of Kathy Fiscus, the little girl who died after falling into an abandoned well, so appealing, especially to parents? It was concrete, personal, real. But many children over the world have fallen into the abyss of ignorance, fear, starvation. Through television we can visualize the life and manners and problems of people all over the world—show some of the grave educational needs of people in India, China, South America, and indeed here in the United States.

What will television do to reading? Kill it? Don't be too sure. A teacher in South Chicago told a friend of mine the other day about a boy in her room who had gone to the library to take out a set of six encyclopedias which had been discussed and displayed on his home television set. He even took his sister along to help him carry them home.

Remember that in reading, unlike television, you go at your own pace, adjust your mental gears to suit the material. Since most adults can be taught to read two or three times as fast as a person will speak on television, they can cover more ground by reading. They can stop at will, re-read.

Remember, too, that one of the reasons why people don't read certain materials is that they lack the concrete experience, the vocabulary, the background. Television can improve reading by supplying this rich background of concrete experience, can help build a live working vocabulary as varied as life itself. But teacher and librarians will have to be on their toes to take advantage of this situation and to meet this new challenge.

We may well expect television commentators to use many aids when presenting the news—maps and models of the countries and cities they are talking about, charts dealing with city, state, and national budgets and expenditures. Few people understand the work of social agencies. But there is a real drama and interest in a "come and see for yourself" tour by television. We can see the slums that need to be rebuilt, the streets that need paving, the work of the TB clinic, the work of recreational agencies. We can learn *concretely*, *personally*, and *really* how Community Chest money is spent. The value of all this for discussion and evaluation in school is readily apparent.

Only fifteen per cent of the adults of Cincinnati knew the answers to as many as four out of six key questions about the UN. The UN for them is impersonal, abstract, unreal. But by picturing its activities—World Health Organization nurses and doctors vaccinating Polish children against TB, Food and Agriculture Organization studying problems of soil erosion, the interesting work done to regulate drug traffic, the work of UNESCO in fundamental education in Haiti—television could make UN personal, concrete, and real.

How many people in this country understand, know, *feel* what the United States is? How many have "experienced" California, Maine, Florida, Kansas, Texas, New York City, the Grand Canyon, the arid Southwest, the Mississippi River? Just a handful, and what a pity it is. But films and direct television can help the U. S. A. picture itself—certainly a tremendous educational gain. Here is a necessary backdrop to an understanding of our history, our geography, our varied people.

Television is radio with its eyes open. If we can teach drawing by radio, certainly television can do it better. If Dr. Joseph E. Maddy, Professor of Radio Music of the University of Michigan, can teach music by radio, then he can teach it better by television. I assume that Ranger Pete who teaches conservation over the Wisconsin School of the Air will be helped by adding images to words.

Television will also use a great deal of film. It will mean a much bigger market for 16-mm. film. That should reduce the cost per reel to schools and enable at least every county or local school system to have its own film library. It will be a great boon to universities producing 16-mm. film. The film will be to television what the recording is to radio.

What are some cultural and educational dangers in television? Too exclusive an interest in producing entertainment for the masses sometimes means thinking of "the masses" as "them asses." This is not a new problem. Specificity and concreteness add dangers as well as advantages. The expression "I saw it on television last night" will add a note of certitude much stronger than "I heard it over the radio." We are already aware of the incorrect pictorial stereotypes of minority groups. Television could sharply increase the number of incorrect pictures that people have "in their heads."

We face then the question of who controls what pictures we see. The pictures we have in our heads are the things that control our thinking. They are our stereotypes, our images. The term "the balanced view" now comes to have special pertinence as it applies to radio. It is easier to distort the truth with pictures than it is with words. Words may be disbelieved, but pictures seldom are.

I have said little about the use of television directly in schools. Eventually it will be enormously important. But even today with radios obtainable for as low as $10 we have equipped not more than 20 per cent of our schools. We have here both a technological and a financial problem.

First we had the thing itself, then a picture of it, and finally we had a word for it. To the single dimension of sound, we now add the dimension of sight. With word plus image we can make the abstract concrete, the impersonal personal, and the vague real. Education will surely benefit from television. Let's not be afraid of the excellence of television. Let's not be afraid of the future.

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Before World War II began, the scientific and technical foundations for television had been laid. And in August, 1941, before the United States entered the war, the first television station in this country was licensed. But the development of television as a major means of communication was delayed by the war. When the war ended, only six television stations were in operation. The number of stations then began to increase rapidly. This increase continued until September, 1948, when the Federal Communications Commission invoked a "freeze" on the licensing of stations.

The freeze was invoked to give the Commission time to study ways in which the limited number of Very High Frequency channels might be used most advantageously and numerous other problems that needed attention. The Commission took three and one-half years to study these problems. During this interval, the television industry developed at a phenomenal rate even though no new stations were licensed. From 1945 to 1950, the number of television sets in American homes increased from 7,000 to 6,600,000. By the end of 1951, the total had increased to 14,500,000 and as of June, 1952, to an estimated 17,627,300. These figures make it apparent that television represents an incalculable force in our national life. Some observers envision vast cultural and economic changes attending the growth of a new medium which will cut across the whole field of communications, public enlightenment, and entertainment. It should be noted, however, that television is almost as costly as it is powerful. Estimates place the cost of a national television service at three to five times that of radio. This cost has caused other observers to wonder whether television will ever become a truly nation-wide medium of communication. Thus far, however, television has developed by a pattern similar to the one of radio. But it is questionable whether its full development can be financed through advertising as has radio.

It is believed by many observers that new forms of support for a television service will develop if its

Growth of Television as a Medium of Communication

In, The Governor's Conference on Educational Television. Sacramento: California State Printing Office, Feb., 1953. Pp. 159-162, 180.

programs are adapted to a wide range of public interests. Such experiments as Phonovision and other plans for "box-office" television suggest the possibility of high-quality programs supported by paid admissions or subscriptions. For educational and related uses of television, municipal, state, and federal subsidies are frequently mentioned.

THE HISTORY OF TELEVISION AS AN EDUCATIONAL MEDIUM

The educational possibilities of television were envisioned in 1930 when such pioneers as William N. Parker and E. B. Kurtz began experimenting with sound-sight broadcasting of educational programs. Eight years later the first public educational television broadcast in this country was conducted when C. C. Clark, a New York University instructor, explained and demonstrated the principles involved in television to a television audience. Almost another 10 years elapsed before the Columbia Broadcasting System and the National Broadcasting Company arranged experimental telecasts of educational programs for in-school viewing. These programs were developed in cooperation with the New York City Schools in 1947. From then on, interest in educational television mounted rapidly. Programs involving the cooperation of commercial stations were developed in a number of large cities such as New York, Philadelphia, Baltimore, Chicago, and Los Angeles. By mid-1951, 19 local public school systems, 56 colleges and universities, and four medical schools had sponsored or were presenting programs by television. More recently, Franklin Dunham, chief of radio and television for the United States Office of Education, reported that 67 school systems and about 100 institutions of higher learning were using television to supplement classroom instruction and to portray the school in action.

Educational programs telecast by commercial stations indicate possibilities of using television for educational purposes. A few of these programs are described here.

Iowa State College—WOI-TV. This television station, licensed in February, 1950, is owned and operated by the college. It should be noted, however, that the station is operated on a commercial basis much of the time. At present the station is affiliated with all four major television networks and carries a number of network programs. Local studio production, which now includes "live" programming, involves a regular staff of 135 and such equipment as four studio cameras and a fast processor for kinescopes. The station has as its primary objectives teaching, telecasting, and program development. It originates about 18 hours of local programs weekly. Each of these programs is developed with the cooperation of a related college department. Local programs—two homemaking programs weekly, two farm shows, three children's programs, five 15-minute newscasts, a college lecture series, and additional programs of discussion, books and literature, news conferences, sports, markets, and state institutions—are supplemented by selected commercial and noncommercial programs from all four television networks.

In 1951 a grant from the Ford Foundation enabled WOI-TV to produce an experimental series of programs regarding 16 Iowa communities and their local problems. This year the Ford Foundation Fund for Adult Education granted the station $180,000 to produce programs on film suitable for use by other educational television stations.

Philadelphia. After preliminary exploration of the problem in the fall of 1947, the Philadelphia public schools inaugurated a series of weekly telecasts in the early months of 1948. In March, 1952, four years later, there were 13 regular school programs each week, received by approximately 40,000 pupils on more than 700 receivers in classrooms in the Philadelphia area. The Philadelphia program has attracted national attention as an outstanding example of cooperation between the schools and the three commercial stations which have been involved from the start.

Baltimore. Beginning with experimental telecasts in 1949, the Baltimore public schools had developed an active television program involving six broadcasts per week in 1950. In 1951 the public schools and 12 colleges were using the television facilities of one local station. Interesting features among the public school television offerings included a late afternoon program depicting classroom procedures for parents and vocational and educational guidance programs for high school students. Another Baltimore station originated the Johns Hopkins Science Review, the first weekly network university television program in the country. Johns Hopkins University gets credit for the first televised closeup of a surgical operation broadcast for a meeting of the American Medical Association in Washington.

The use that has been made of television as an educational medium reveals the following information.

1. A relatively large number of school systems and institutions of higher learning have already entered the field of educational television. This experience has been described as ranging from rewarding and encouraging to highly exciting. The possibility of revolutionary changes in education is suggested.

2. Types of programs thus far developed include direct classroom teaching, demonstrations of teaching methods, education-in-action programs for parents and teachers, historical and significant current events as they happen, informative and cultural broadcasts for the home audience, extension courses for adults, and school-at-home telecasts for shut-ins.

3. With one or two exceptions, educational television programs have been telecast over commercial facilities. There have been many notable instances of cooperation between commercial stations and educational institutions. However, there is evidence that the increasing pressure of advertisers for television time has created serious problems for educational institutions using commercial facilities.

On April 13, 1952, the Federal Communications Commission announced a table of channel allocations for the United States and its territories reserving 242 assignments exclusively for noncommercial educational broadcasting. Eighty of the reserved channels are in the Very High Frequency (VHF) portion of the television spectrum; 162 allocations lie in the new Ultra High Frequency (UHF) portion. The allocations to education constitute about 12 percent of the 2,053 channels allocated.

The reservations for educational television may be considered "firm" only through June 2, 1953. After this date the allocation plan is subject to alteration, and petitions to change educational assignments to commercial assignments may be submitted to the Federal Communications Commission.

Educators throughout the nation are developing definite plans for the operation of noncommercial television stations on the channels available. Typically, these plans involve community-wide cooperation of educational agencies.

FINANCIAL PROBLEMS OF EDUCATIONAL TELEVISION

The capital outlay for a television station will vary greatly depending upon the size of the area to be served, the quality of service to be rendered, and to a lesser extent, upon construction costs in the area where the station is to be located. Capital outlay also varies a great deal depending upon the financial resources of the station. Of 687 applications filed with the Federal Communications Commission as of August 1, 1952, estimated construction costs varied from $40,000 to $1,810,000. Six of the eight channels tentatively allocated for noncommercial educational purposes in California are in cities of 50,000 to 250,000 population. Of the applications filed for cities of this size, estimated construction costs varied from $75,800 to $1,350,000. This variance may indicate a tendency for commercial applicants to be governed more by their financial resources than by the need or market in their area. 〇 〇 〇

An informed citizenry is the objective of public education. Major contributions have been made toward meeting this objective by the use of such mediums as the press, newspapers, periodicals, pamphlets, and books, entertainment and instructional motion pictures, and radio. Each of these has been aided by a wide variety of inventions and mechanisms, exemplified by the linotype, high-speed power presses, telegraphy, teletype, radio transmitters and receivers, and projectors.

Educational Function of Television

An analysis which has had wide acceptance came from the Educational Policies Commission, which subdivides the functions of public education into four major categories. Television as a dynamic combination of radio and the motion picture can also be expected to make an important contribution to public education. Like all other materials or tools for teaching, television should contribute to the over-all goals of education. These may be stated as the goals of (a) self-realization, (b) human relationships, (c) economic efficiency, (d) civic responsibility.

Self-Realization: The individual is the unit of our human resources. The skill with which the individual deals with human and physical aspects of his surroundings determines the success with which the family, the community, the business or other economic organization, and the city, county, state, or nation or political entity meet their problems and discharge their functions. Conversely, a business or political entity cannot be composed of individuals who are comparatively unskilled and yet endure.

These skills are legion—ranging from the fundamental skills of communication, speaking, reading, etc. to those necessary in the extreme variety of our thousands of vocations. They vary with each individual.

Human Relationships: This function of public education gives primary recognition to that which enables the individual to be a desirable member of a group. This includes a basic code of ethics and the skills to make such a code workable. Beyond this, specific attention is required for those groups in which large portions of the public find membership. Such typical groups are the family, community, and vocation associates. Here again attitudes which enable various ethnic groups to make optimum social contributions are important functional elements.

Economic Responsibility: This function of public education must be supportive to the individual in at least three of his economic roles. The first two

are obvious—as a producer and a consumer. The third role is equally important—a policy maker in establishing a social climate which is favorable to the standard of living we expect from our American system of free economic enterprise.

Civic Responsibility: Public education undertakes to develop civic skill based upon an understanding and appreciation of the American tradition of liberty. This means understanding the operative framework of government—local, state and federal. The numerous civic skills include such elements as (1) how to keep one's leaders responsible, (2) how to register approval or protest, (3) how to make use of one's membership in groups so that the policies of these groups may reflect the general public good, (4) how to use expert advice in arriving at public decisions.

ASPECTS OF THE CLASSROOM FUNCTION OF TELEVISION

To discover the utility of television for the classroom, the New Jersey State Teachers College undertook an experimental project. Two excerpts from their report are given. The first excerpt describes the project.

"The New Jersey State Teachers College at Montclair produced eight programs of lesson material planned by public school teachers for their own classes. These eight lessons were transmitted over Ultra High Frequency Channel 54 to specially prepared television receivers in 13 public schools in Bloomfield and Montclair, where they were used as a part of the regular school work for the day by the classes for which they were designed. Planned units of education by television were carried on in these schools from 8:50 in the morning until 3:20 in the afternoon of April 30, 1952."

The second excerpt reports their 10 conclusions regarding the project.

1. Television can make a valuable contribution to classroom teaching, supplementing the work of the teacher.

2. The television program is most effective when it brings to the classroom experiences, materials, or demonstrations that are not readily available to the class room teacher.

3. The teacher, demonstrator, guide, or other resource person who appears on the screen must possess enthusiasm, a knowledge of the principles of teaching, and special qualities of voice and manner, if the lesson is to succeed.

4. Technical quality is not as important in educational television as in commercial television. If the content is absorbing, students are quiet, they pay attention, they learn.

5. A television center and community schools can cooperate effectively to produce good educational results. Teachers should be the planners, and elements representing many sides of the community can work with them in programming education.

6. Programs should be limited—should not include too much material. The purpose is not to overwhelm the students, as with a dramatic spectacle, but to teach something distinctive enough to be remembered.

7. Some preparation before classroom reception is always desirable. Those lessons are received best which do not interrupt the continuity of school, but which augment and supplement what is being taught.

8. Television has great value in vitalizing subject-matter, in stimulating student interest and activity, and in broadening students' backgrounds.

9. The 20-30 minute program fits into most school schedules and leaves proper discussion time before the end of the period. It is by means of the discussion that the educational values are activated.

10. Production of effective educational programs is practicable by workshop groups made up of college students. They can take part in planning and programming; they can write the scripts; and they can put the educational units on the screen.

As concisely stated by Roy E. Simpson, Superintendent of Public Instruction: "Educational television involves much more than classroom applications. It is an educational resource belonging to all the people for the benefit of all people."

The "classroom" function has as one of its most difficult problems the meeting of individual differences among pupils. "Differences among school children relative to general intelligence, previous experience, study habits, interests, and other traits furnish the setting of a complex educational problem." Notable efforts have been made through plans and materials to individualize instruction. The Dalton, Winnetka, Thayer, and Morrison Plans had this purpose. This purpose also motivated the development of instructional techniques identified as unit teaching, project and problem methods, and resource units. All of these efforts have heightened the importance of the teacher as vitally necessary in the classroom. Television, a flexible and multisensory medium of communication, will gain value in the public school as it fits into the trend of increasingly individualized instruction.

EDUCATIONAL FUNCTIONS OF TELEVISION PROPOSED BY APPLICANTS TO THE FEDERAL COMMUNICATIONS COMMISSION

The following material has been compiled in brief form from statements filed with the FCC by colleges, universities, school systems, state departments

of education and public service agencies in support of educational television channels.

A. Proposals for utilization of educational television

1. To serve the children, youth, and adults of state.

2. To improve community life and culture.

3. To contribute to development and spread of knowledge.

4. To present programs in the public interest.

5. To interpret the school to the community.

6. To give instructional programs for farm population and other groups.

B. Proposals for programming

1. Family living and homemaking: parent education, family life and mutual assistance, cooking, sewing, interior decoration, home landscaping and gardening, fire prevention, food processing, nutrition, home safety, driver education.

2. Hobbies: stamp club, model train club, craft course demonstration, nature study, photography.

3. Programs for handicapped: speech clinic, hearing clinic, reading clinic, slow learner clinic.

4. Fine arts: music appreciation and vocal and instrumental music; art; painting with water colors and oils; plaster sculpture; pottery, etching, lithography; printmaking.

5. Special programs for children: puppets; dramatizations of children's classes; cartooning; dramatizations of literary classics; chemical shows for children.

6. Health: talks on heart disease, cancer, ulcers, arthritis, polio, etc.

7. Agriculture: techniques in farming; veterinary medicine for layman.

8. Industries: demonstrations of plastics; acoustical problems; aeronautics; business practices; construction trades; air conditioning and refrigeration; mechanical maintenance; electrical trades; petroleum technology.

9. Information: current event forums; panels; symposiums; community information; civil defense; science demonstrations; opinion research; demonstration of economics and consumer problems.

10. Culture: culture areas—Africa, India, Japan, Scandinavia; intergroup relations; opinion research; planetarium and museum viewing.

11. Guidance: aptitude testing; emotional problems of employees (suggested as dramatic serial through collaboration of college departments of drama and psychology).

12. Historical events and monuments: maps; museums; historic shrines.

13. Instruction in vocational skills, literacy education.

III Elementary Schools

A. GENERAL DISCUSSIONS

Learning through experience makes education thrilling and significant for children in their first years in school. Yet while first-hand learning is best in developing most concepts, there remain many instances because of the limitations of time and place, where learning must be vicarious. *Then, audio-visual materials provide the nearest approach to real experience.*

The Primary Child's World and Audio-Visual Materials

By
HELEN RACHFORD

See and Hear, Vol. 5, No. 6, Feb., 20, 1950. Pp. 27-29.

Experience in his home is the child's first teacher. He finds out for himself that the kitten can scratch and that the heater can burn. In the neighborhood around his home he gains more information directly. Play, an important part of all of his activities, is his chief method of expression. His play is absorbing and seems essential to good mental health.

When the child enters school, his horizons are broadened. As he brings only his individual background of experience, he needs many common experiences, both real and vicarious, with his classmates, to continue his growth. Thus the school provides a model home and play-house in which children may continue their experiences—*together!*

What Kinds of Audio-Visual Materials Are Most Effective?

Instructional materials, in the broadest sense of the term, which fit into the child's pattern of life, are varied and available everywhere. These materials are important because of the information they give and also because they open other avenues of expression through construction, creative writing, drawing, reading, rhythms, and songs. For example, experiences in construction help boys and girls to clarify ideas and to extend their learnings. *Audio-visual materials as an integral part of teaching keep the program from becoming book-centered.*

Children respond to concrete objects during their learning experiences. In the arithmetic lesson, the use of objects such as quart, pint, half-pint bottles, or cartons to look at, handle, and compare the amounts of liquid they hold gives exact and real meanings and increases common understanding. Basic arithmetic facts learned from real experiencing allow the children to really understand the number processes.

Taking care of animals—a hen, rabbit or hamster —keeping them clean, feeding them, breeding them, and charting periods of incubation provides opportunity for more direct experience. Most children gain a great deal of confidence and satisfaction through caring for animals or poultry. To care for, feed and play with his hamster is to understand. Later reading about pets will be undertaken with high purpose and ease of association—the symbol for the idea!

We Explore the Community

Another of the aims of the school is to help the child understand the community he lives in. Obviously, *the best method of learning about the community is to go into it.* Walks around the neighborhood to look at animals and plants in parks or gardens, to observe growth changes and seasonal changes, and to see pets acquaint the children with their environment. Trips to explore the nearby store, visit the fire department or like this we go to the "post office" even though today it has taken wing, tend to mold group feeling because they give a common experience out of which sharing and growth result.

And what is the purpose of all these first hand learning opportunities—opportunities to go in small groups away from the school, out into the community, to see, to observe, to experience? Certainly the most readily thought of purpose is to provide a wide background of reading readiness activities, but there are secondary, if not higher purposes to be served— namely, those which bring experiencing to its true outlet via the child's imaginative creative urge.

These young children of primary grade level have not only experienced the opportunity of observing the fishing boats in the harbor, but now have been asked to create their impressions—not necessarily in speaking, discussion or other forms of communication, but, in this case, through artistic expression, through ma-

nipulating crayons, charcoal or other drawing materials.

These two young children—little Neisi boys—are constructing an auto ferry. Have they created this out of some mysterious fund of information or imagination? No. Their ideas have been expressed as the result of their opportunity to see these things exist in their community to observe carefully, then to re-create their ideas—each according to his own creative imagination—back in his classroom workshop.

SELECTING AND PLACING PICTURES

Reproductions of the old masters, of contemporary artists, and photographic study prints tie into the children's units of work. Some of these pictures, mounted attractively and placed on the eye level of the children during their study, are selected to point up the lesson. Others are used for room environment, to create an atmosphere which reflects the beauty of our culture; thus, they serve as an indirect method of teaching. Alert teachers will have their own picture files. Children whose backgrounds have been permeated with beautiful pictures, slides, films, and visual impressions from field trips express themselves creatively.

UTILIZING FILMS, FILMSTRIPS, SLIDES

Films about wild life, about children—particularly in other parts of the nation and of the world, stimulate thought, concentrate attention and begin to help the child understand his place in the world. Films are valuable for building reading readiness because they add to the child's fund of information and bring meaning to what he reads.

With filmstrips and slides, the teacher has the advantage of controlling the pace, talking as the pictures are shown, and of encouraging the children to talk. Young children are generally credulous about what they hear and see. They tend to react intensely and spontaneously. Their backgrounds, as with older children, condition the intensity of the reactions irrespective of whether the new experience is real or vicarious.

LISTENING TO RECORDINGS AND SCHOOL BROADCASTS

Listening to stories told by the teacher, recorded, or heard over the air is fun. Youngsters enjoy the beauty of poetry and the sounds of the music and of the words. They will listen to musical selections which seem to be far beyond their level of maturity, as Bach and Brahms, if listening time is provided. They enjoy hearing the same song or story over and over again.

The advantages of using audio-visual materials at the primary level are much the same as those at other levels. Audio-visual materials carry meaning because they are real and tangible; they serve both to arrest and hold attention and to stimulate creativity. Good teaching involves using all audio and visual experiencing smoothly and with purpose — with the attention of the learners on the lesson rather than on the methods or media. Fortunately, the range of materials from the tiniest seed or smallest shell to the teaching film is exciting and unlimited— and all of these materials of instruction should and must be provided to all the children who come into our schools if we as teachers are to accomplish our goal—to truly prepare our children and our youth of today for the great world of tomorow!

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Visual Education in the Kindergarten

By
MARGARET M. BRINE

Visual Education had its birth in the kindergarten. Froebel wisely made sensory experiences one of the important factors in child training. The e x c u r s i o n where the child is taken out of his normal environment in an attempt to bring him to the realization that he is a link in the great life about him as well as the many and varied objective materials brought by the kindergarten to the child have long been familiar to us. This method of exposing the child to these sensory experiences has gradually spread throughout the school system and to these have been added other visual aids, particularly the motion picture and the lantern slide.

The kindergarten set the pace. It is not going to lag behind but will continue to keep abreast with modern practices. To accomplish this, it makes use of the most economical method of teaching, economical in the sense that subject matter will be enriched, retention will be greater and the creation of interest will be far beyond our power to measure.

The motion picture has already proved its value in the classroom. It is to be regretted that for the four and five-year-old levels there is very little film material. Here is a field yet unexploited, an opportunity for educative films. The stereopticon, on the other hand, offers a wealth of material in the form of glass slides. The slide is of great value in that large clear pictures can be studied without eyestrain. One teacher has gathered and sorted slides so that they are available in such groups as—

1. Activities of Childhood.
2. Birds.
3. Animals of the Farm.
4. Animals of the Zoo.
5. Transportation.
6. Children of other Lands.

The list readily suggests how slides could vitalize a program. Another kindergartener has painted slides in such a manner as to best illustrate her story. A group of nursery rhymes flashed on the screen is a never ending source of joy. Birds have been painted and the readiness with which the children identify them after a few showings is sufficient proof of the picture power. The possibilities are endless.

As to method of presentation, that will no doubt vary with the individual teacher. The following suggestions have proved most fruitful. For the motion picture, a familiarity with the subject matter before showing should be a requisite, for there should be no interruption through the showing (which is given mainly to clarify the teacher's oral presentation). Another procedure may be used for the lantern slide. It is advisable for the teacher in the early showings to carry on the discussion, explaining and aiding the children to look carefully and thoughtfully at what is before them. Later the child may take over the discussion. Many a shy child under the cover of darkness will go up to the screen with pointer in hand and freely discuss what he sees. One cannot question the contribution of enrichment and the opportunities for oral language that this experience affords. New words creep into the vocabulary, speech defects are corrected and imagination enlivened.

A venerable device, but still of great value, is the stereoscope. It excels all mediums in portraying the feeling of solidity, hence realism. Group conversation blossoms as three or four children exchange their thoughts on what they have seen.

It is impossible to leave this subject without a few words of comment on the use of blackboard drawings. How many stories would have gained zest had the teacher with a few simple line drawings illustrated the action of the story. In time the children may be encouraged to present their stories in similar manner. A very interesting result of this was seen in a group of three children covering the blackboard with the story of the pony engine. This provoked much discussion on the part of the illustrators and equally as much criticism and suggestion from their classmates.

The kindergartener who feels keenly the great responsibility that is placed upon her, will wholeheartedly welcome methods which vitalize and in turn lead to economy in learning. In this way she can prove her intense loyalty toward her profession and her country.

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As an individual and teacher, I believe that audio-visual materials are important. Why? Because I have used them: used them singly and in combination; used them under perfect conditions and under not so perfect conditions. The results have been good, only fair, or excellent, in proportion to my remembering to do one thing, namely, to think.

Why Think About Audio-Visual Materials?

By
IRENE F. CYPHER

Every child who comes into a school brings with him his likes and dislikes, habits, attitudes, mannerisms, skills, and reactions. This modern child is the product of his home and the diverse things found there, such as radio, television, phonographs, cameras, mechanical devices, home movies, community movies, trips to zoos, and trips to the country. He enters school with a host of ideas running rampant through his mind. At this point the school is expected to lead him through a maze of subjects included in the curriculum and produce the so-called educated individual.

This is quite a goal when we consider the size of the modern world and the many peoples who live thereon. Is it possible for a teacher to do what we are asking her to do, to bring this world into the classroom? It is, to the extent that she is provided with adequate materials for doing the job, and to the extent that she *thinks* about how to use them effectively.

To take first things first, it seems to me that the most sensible and feasible way to bring the world into our classrooms is to make use of the teaching materials which depict and represent this world. This points directly to the use of such things as motion pictures and recordings. In various ways these show the world in all the richness of its color, and form, and the life that is lived on it from pole to pole by man, birds, animals, insects, flowers, and so on.

Shall the teacher use them all? Do they relieve her of work or responsibility in her own presentation of information? Do they actually make it easier for her pupils to grasp facts? Do they really help to prepare her pupils for life? Why is it so important to think about them anyhow? Why not stick to the tried and true traditions, and rely wholly upon teacher, plus blackboard and chalk, plus books? This combination functioned for many years and produced some very good scholars without the help of any newfangled gadgets.

We should face the facts and awake to the realization that the gadgets of visual instruction have been overemphasized. *We have let the fact that it is necessary to use equipment blind us to the fact that it is the materials shown by means of the equipment which should be our major concern.*

There are many excellent films, filmstrips, slides, and recordings. The persons responsible for their

creation have devoted time, research, and effort to the production of something the purpose of which is to take the cold formal facts and make them clear, interesting, and understandable. Like the parts of any whole, each has a function. The strength of one is the weakness of another. One supplements another. One helps to clarify pictorial impressions; another helps to make sound impressions more meaningful.

Not one of these materials, however, is designed to perform miracles. Good results are achieved only when the teacher thinks about how to use them in relation to subject matter and the needs of the human beings who comprise her class.

There are many books about any one topic, but we do not expect to read them all. There are many chapters in any textbook, but we do not always assign them all in one term or for one lesson. Why not try an application of some of the plain common sense we have used in other situations to our utilization of audio-visual materials? The criticisms we hear are all too often occasioned by poor techniques of utilization, and lack of thought when selecting materials.

The enthusiastic users of audio-visual materials do not advocate filling all the hours of the school day with *spectatoritis* sessions (motion-picture showings). They want active discussion periods, but they also know that such periods are frequently more active when the discussion is motivated by the viewing of a film or filmstrip.

Further thought and investigation will reveal that the good teacher who uses audio-visual materials does not smother curriculum content with a hodge-podge of meaningless gazing at pictures. Rather she uses them to bring to light unsuspected details that will interest pupils and stimulate them to research beyond that necessary to meet lesson requirements.

The true believer in the efficacy of audio-visual materials is not a believer in "audio-visual periods," but in classroom lessons that include utilization of whatever will serve to interest, stimulate, and answer the needs of the group.

In our schools today we want good materials that present true, interesting pictures, and the utilization of these materials in such a way that pupils are stimulated to think for themselves in all subject areas. Our own experience has been that the best thinking about, and use of, audio-visual materials is going on in the elementary schools. The millenium has not been reached, however, and there is still need for improvement along the following lines.

Think before you purchase or rent. Select materials that meet specific needs in your own particular school and don't let anyone high-pressure you into the final selection. Examine materials and do not accept on mere paper descriptions. The only reason for including any materials in your program is to serve the needs of your curriculum and your pupils. A crowded stockroom is not necessarily an indication that you have a good supply of teaching aids. The best criterion is still quality.

Think before using. Is the material adequate for subject coverage, adapted to age levels and interests? Don't blame the material if *you* select too advanced or too elementary a presentation.

Think while using. Are you presenting the material under the best possible conditions, and in a way designed to get the best reactions? Don't become a devotee of "one method of presentation." Vary your materials and how you use them. Don't be afraid to use new materials or new techniques of presentation.

Think after using. Did you achieve the results you desired? Did you leave a true impression in the minds of your pupils? Is there something still to be uncovered? Reactions vary from class to class, and you cannot take it for granted that all classes will react at the same rate of speed or respond in the same way.

Think about the fact that the same types of materials you are using in the schoolroom are also in the homes of your pupils. Try building up looking and listening tastes that will help them select better movies, radio, and television programs for their after-school hours.

A few materials, well chosen, interesting to pupils and teacher, and used in a normal, natural way make an excellent classroom situation. What a wonderful training ground for the child now, and for the adult to come! But why *just* think—why don't you try it and prove this to be true?

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B. DISCUSSIONS OF HOW TO USE THE DIFFERENT TYPES OF AUDIO-VISUAL MATERIALS

The field trip is one of today's most misused teaching aids—in spite of its wide acceptance among educators.

Field trips are *work* but they are *worth* it.

Good field trips require:

The Field Trip

By
BEATRICE FORD PARKER

1. Detailed planning.
2. Competent handling.
3. Careful evaluation.

Since the teacher is without manuals or guides to aid in the preparation of a trip, the planning must be:

1. Largely creative.
2. Fitted to the needs of the group.
3. Aware of the possibilities in the proposed trip.

"When should I use a field trip?" the teacher may ask. The answer is *when the children are ready for it,* and the proper time may be:

1. As an introduction to a new unit or area of learning.

2. To arouse interest and stimulate questions and further study.

3. To solve a problem—by answering questions arising from a certain study subject.

4. To present special information.

5. To teach a skill.

6. As a culmination of some classroom activity.

Once the time for the field trip has been determined, the teacher should take a "preview" trip in order to:

1. Acquaint herself with the situations likely to arise.

2. Determine required time.

3. Discuss the needs of her pupils in advance with the workers on the scene.

4. Notice what points should be featured at various stages.

Now the teacher is ready to begin orienting the children and arousing their interests in the areas to be covered by the trip. Reading and discussion experiences should relate not only to the present study but to previous learnings and future areas of interest.

Children have a right to know *why* they engage in an activity. They will gain more benefits from a field trip if they know *what to look for.* This may be accomplished by:

1. Lists of questions recorded on charts or in individual notebooks.

2. Pupils volunteering to find answers to specific questions or problems, and reporting to the class later.

3. Committees who investigate areas not available to the class because of time or space limitations.

Some trips will necessarily be confined to *observing* only—where parts and materials cannot be handled nor manipulated. Back in the schoolroom the children can increase their *direct experience* learning by creating models of their own.

As a test of learning values, contrast the experiences of the class that only went to "see" a grocery store with the experiences of the class which had a "reason" to see a grocery store. After studying nutrition and menu planning, these children actually shopped in the store; located and purchased an item from their market list; handled real money to pay for it; counted their change from the cashier.

The culminating activity for this group might include the preparation and serving of a meal based on food purchased during the field trip. (In the event no school funds are available for the shopping experience, a P. T. A. group might be interested

enough to provide funds, or a room mother might permit the class to do one day's shopping for her family.)

The grocery-store visit was dynamic, real, and meaningful for these children because of:

1. Shared responsibilities.

2. Enjoying related activities in the skill subjects —writing, spelling, arithmetic, reading.

Are your field trips like this? On a day decided by you as the teacher, your class visits the post office. Returning to the classroom, you permit a fifteen-minute discussion, and the children conclude the activity by writing a thank-you note to the postmaster who had escorted them on the tour.

Or, have you tried this build-up for a field trip? While working on a post-office unit, this class began the construction of a schoolroom post office based on knowledge acquired from pictures and books in the library. *From their own need to know,* the children *asked* the teacher whether they could visit a real post office.

For the preview trip, several pupils volunteered to go with the teacher.

Class planning was involved in:

1. Writing a letter to the postmaster asking permission for the visit and requesting a convenient date and time.

2. Listing questions they would like answered.

3. Discussion of manners and safety.

4. Assigning committees for special examination of the cancelling machine and scales—so models for the school post office could be made later.

These children *wanted to know how* a letter traveled through the post office, so one committee wrote and addressed a letter to another teacher. This was to be mailed at the post office during the visit.

Another committee correctly wrapped two packages. They were addressed to former classmates who had moved. Since one lived north of our city and the other to the south, the children learned about directions, train routes, fourth-class mail, and how the mail bags leave the post office by truck, and are put on the trains.

On Field-Trip Day, everyone in the class was *ready* for the experience. Here is a step-by-step account of their trip. (The record about the trip may be included in individual or class notebooks.)

1. School bus stopped at address of teacher to whom the letter had been written.

2. The children examined her mailbox and made a record of the number on it.

3. At the post office, one committee located the proper slot for mailing the letter. When they dropped

it through the slot, the others in the class watched it fall into the bin.

4. Children observed letters removed from bin, sorted for out-going and local, and canceled by machine.

5. They watched when their letter was placed in the pigeonhole for the postman to deliver to their friend.

6. The package committee saw how the parcels were weighed, paid for the postage needed, received and counted their change, saw the clerk cancel the postage by hand, and noted that the packages were placed in separate bags marked for cities indicated on their address.

7. As a finale to the trip, the teacher who received the letter came in person to thank the class and report the time of its arrival in her mailbox. She then returned it to the class to be displayed on their project bulletin board.

FOLLOW-UP ACTIVITIES

The *success* of a field trip depends on whether the children *use* the learning or skills. This follow-up should *begin* as soon as they return to the classroom. Children derive pleasure and profit from *reliving* their field trip. This may be done through various art forms—painting, modeling, construction, creative writing, rhythms, music, and dramatic plays. Books, charts, films, and records will supplement, enrich, and impress their field-trip experiences. The possibilities are endless and all can by no means be included in a single study.

How many field trips a year? To children, you will find that too many trips are as confusing as too many class activities. A few well-planned trips serve best to:

1. Bring the community and classroom closer together.

2. Bridge the gap between life *in* and *out* of school.

3. Encourage a continuity of learning which carries over the child's day.

4. Educate in terms of citizenship through group planning and execution of activities.

5. Develop correct understandings, attitudes, and appreciations.

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> *Practically every elementary school can afford a tape recorder. It is a valuable teaching tool.*

"Does my voice really sound like that, Miss Drake?" The experience of hearing one's own voice objectively for the first time is received in various ways. Children are thrilled, surprised, disappointed, shocked, amazed; and most just can't believe it is their own voice that they are hearing.

Getting the Most from Your Tape Recorder

By
ARTHUR F. BYRNES
The Instructor, Vol. 62, No. 5, Jan., 1953. P. 17.

Recording sound on tape is one of the newer technical tools that educators are discovering in their search to make experiences in the school more real and alive.

It is wholesome to note that teachers are aware of their responsibilities to make learning situations as concrete as possible and are enterprising enough to include in their teaching materials the latest technical developments.

With the exception of television, recording sound on tape is the most talked-about aid to teachers in the field of education today. There are hundreds of locally produced tape recordings that are appropriate for teaching but that cannot be used because of a bottleneck in evaluation, organization, cataloguing, and distribution. With good co-operation among the professional societies, an excellent project in this direction could be accomplished.

The reason for the success of recording sound on tape over other methods of recording is that it is surprisingly simple and much more lifelike in quality. Recordings are inexpensive, adaptable, flexible, re-usable, easily stored and duplicated, and non-breakable. The technique of making a tape recording can readily be learned by a primary-grade child.

Tape recording, as used in the schools today, has not even begun to probe the depths of its inherent possibilities. The uses of tape recording that are currently being made may be classified under the broad areas of *Creative, Corrective,* and *Recall.* Let's examine some of these uses.

Perhaps the most stimulating application of the tape recorder in the elementary schools to date has been in the creative field.

Teachers have added sound, individually tailored to their particular class needs, to silent filmstrips.

Scripts recorded on tape add objectiveness to opaque projection.

Original class plays, skits, programs, contests, and lessons recorded for either immediate playback, or radio consummation, add reality and incentive to school life.

Music, both choral and instrumental, group and solo, arranged or written locally and recorded on tape for future use, lends interest to classwork.

Sound on tape helps improve puppet performances. Developing a story from recorded sounds helps develop imagination and thinking.

With a little experiment children can get a variety of sound effects. Rice sprinkled on a tin pan will give the sound of hard rain. Paper crumbled close to the microphone will sound like thunder. Breathing heavily into the microphone with the volume turned high will simulate a strong wind, or even an explosion. With tape, effects can be tried over and over again until they are perfected, since erasing ineffectual efforts is an easy matter.

Speech therapists have been quick to realize the value of recording a subject's speech on tape for critical purposes. Stimulation for the normal child to improve his speech pronunciation, patterns, tone, and diction has been almost like magic when his voice is recorded and played back for him and his classmates to hear.

Normally, grammar is quite difficult to teach because of the problem of making it interesting enough so the pupils will want to learn. Listening to a pre-recorded radio talk that illustrates proper use of English and then contrasting this with a pupil's recording of the same material helps to provide motivation. This approach is positive, objective, and has been proved highly effective.

A similar method can be used in the field of music. With a pre-recorded tape the teacher can point out exactly the effect he desires. *Music teachers can record the performance of an individual or group and then accurately point out errors* in tone, pace, notes, rhythm, pitch, and scale.

When children have difficulty learning two-part music the tape recorder is of great assistance. The entire class records the melody on tape. They practice the second part alone and then sing it with the tape-recorded melody. Once two parts are learned, they can be recorded on tape and then a third part added. For a novelty program a talented child can imitate Patti Page and sing a duet with herself.

A novel, yet highly effective, method of learning made possible through recording sound on tape is found in the field of drama. Learning a character part is usually a tedious chore. Recording the play, omitting one character's lines while allowing enough blank space and time on the recording for the character to supply his part, speeds up the learning process and helps remove a soporific task from the performers and director.

Recalling titles, background, composer, and theme after a musical score has been played helps pupils appreciate music to a greater degree.

Interest in spelling can be increased by using the tape recorder to pronounce the words for the children to spell. Spelling contests lend themselves to application of the tape recorder.

In arithmetic a series of numbers can be recorded and then some numbers in the sequences omitted. These can be supplied by the individual or class.

One of the best techniques in the area of recall is being able to utilize radio programs after they have been broadcast. *It is a simple matter to record a program directly from the radio, store it, and use it when the recording best fits the needs of the class.*

The teacher does not have to be present when the recording is made. A clock can turn on the radio and recorder while a tuner controls the volume and tone. A library of recordings of useful radio programs can thus be developed. This gives educational radio a new dimension. No longer do administrative and scheduling difficulties hamper a teacher from using radio.

At the present time, twenty-one states have libraries of tape recordings for distribution to the schools within the state. *Almost all areas of the curriculum have recorded material available to help enrich the program of instruction.* There are tapes on art, English, social studies, science, storytelling, language arts, literature, arithmetic, physical education, and recreation. New titles are constantly being added. Some tape libraries have a slight service charge for duplicating the program on a school's tapes; others do it free of charge.

Two things are certain about tape recording. It makes education more meaningful, and it is bound to grow in its scope and its application in our schools.

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"Our class is going on a make-believe airplane trip to Antarctica today—all the way to the bottom of the earth," remarked Nancy, in the hall.

"You can't," John answered indignantly, "there's no bottom of the earth! I know because our teacher showed us a filmstrip about it and there's only a north pole and a south pole."

Filmstrips? We Use Them

By EVA S. LLOYD

"I wish we could have filmstrips, but our teacher never uses things like that," Nancy said.

Sometimes one is reluctant to use that which is unfamiliar and new. Any classroom teacher can easily use filmstrips if she has the minimum necessary equipment. Many times during the showing of a filmstrip, a child has exclaimed, "Oh, now I know what you mean." Remarks like this help us realize the worth of filmstrips.

There are several advantages in using filmstrips. In a large class, they enable the teacher to reach each and every child. The child who has difficulty

in reading can get a better understanding from what he sees. If there is text, a child who is a good reader may be chosen to read. This not only gives him reading practice but helps the others to understand the picture better. Children should be encouraged to discuss and ask questions freely. Filmstrips encourage the bashful child to speak, for at this time the children are looking at the filmstrip and not at the child speaking.

Any one picture frame may be referred to as many times as needed with little difficulty. This particular phase makes filmstrips more advantageous than a moving film. Another advantage is that a filmstrip projector and small screen are easily moved from one place to another. A minimum of skill and time is needed to set up a filmstrip projector.

Before using a filmstrip, a teacher should preview, and become familiar with, the material to be shown. She may then anticipate questions which the children will have. Filmstrips serve their purpose better if there is a class discussion either first, or after a subject has been well launched and the children have a working knowledge of it. A filmstrip may well be used to summarize a unit, and to make it more meaningful to the class.

To show a filmstrip to a group, the room should be as dark as possible. However, regular shades may be used with a green-colored screen that has wings on each side to protect the screen proper from direct glare. The projector is all important. A 500-watt air-cooled projector gives a bright picture even with some light in the room.

Some schools have a special room for the use of audio-visual materials. I feel, however, that the classroom is the most preferable location. Then when a filmstrip has been shown, discussion may take place immediately. If necessary, the projector can be turned on and the frame or frames about which there is a question viewed again. There is not the distraction of moving from one room to another. A further advantage of using the classroom is the conservation of time. It takes precious minutes to move to another room and back again.

There are many good filmstrips from which to choose. The filmstrips which correlate with reading series are very worth while. A filmstrip may show the life of people in other countries.

The pictures elaborate upon, and portray, those things which are difficult for the children to understand from mere descriptions. For instance, the *peel* used in pioneer times to take bread from a brick oven might mean something different to each child. Show them a filmstrip of a pioneer mother taking a loaf of bread from the oven with this long-handled gadget, and each will really understand.

Many science filmstrips will serve as reinforcements of science facts that have been discussed. In studying the different kinds of trees as shown by their leaves, the class collected and pressed many kinds of leaves. Then the leaves were mounted on paper and labeled. The leaves were then compared with filmstrip pictures to see whether the leaves were labeled correctly. A spatter painting of a favorite leaf was made and used as a cover for each person's leaf booklet. Many teaching materials may be used in conjunction with the filmstrip.

At the beginning of the year the flag salute was studied as to its real meaning for each individual in the room. Then the children copied the pledge and made several colored flags to show some of the many steps in the development of our flag. A series of colored filmstrips was then shown, on the history of our flag, our national anthem, and flag etiquette. Finally we joined the children on the screen in the pledge of allegiance to our flag.

While we were working in social studies, many maps, globes, and filmstrips were used together. We discovered that each piece of equipment explained the same thing, only in a different manner.

Thus, filmstrips are useful in each subject. Through a knowledge of the materials available and a preview of them, a teacher can more wisely select the material for her class. Like all teaching materials, filmstrips are valuable only if skillfully used.

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What is an educational film? The answer to this question is not easily spelled out, for here is a query that has been posed many times by educators and by motion-picture producers. Some have answered by saying simply that it is any film which is nontheatrical. However, this definition has been found too vague to be of value, and it overlooks the point that many of the theatrical films may be highly educative when used for instructional purposes.

Types of Educational Films

By
F. DEAN McCLUSKY

Others, seeking a simple production formula, have attempted to find a word, such as *documentary,* which would characterize educational motion pictures. It is clear that this type of reply is not satisfactory either, because educational motion pictures must satisfy the multiple interests demanded by varied instructional situations and, therefore, cannot be hidebound to a single production pattern. Obviously, the answer to our question lies in a characterization of the types of educational motion pictures. This was illustrated in a recent conference of teachers who were discussing the nature of the educational film.

Miss B—— opened the discussion by saying, "I teach third grade. Where can I find a good film for our story period? All of the films which I have seen are unsuited to this purpose, for they are either too technical, or too involved, or cover too much material for third-grade pupils. I want a simple story that will serve as a springboard for reading and compositions."

"We recently used a film entitled, *The Hare and the Tortoise,* in our school which is just the type of film you have in mind," said Miss L——. "It is an Encyclopaedia Britannica production which depicts the old fable by using live animals. The words of the commentary were all within the range of our children's understanding, so they liked the story. This is certainly a distinct kind of film, is it not?"

"Yes," I replied, "*The Hare and the Tortoise* is a good example of the *narrative* motion picture, which is one of twelve types of educational films we have been able to identify. I wish we had more good narrative films which could be used for the purpose which Miss B—— has outlined."

"How do you classify the 'technical' films which Miss B—— mentioned?" asked Mr. K——. "And what is their value to teachers in elementary schools?"

"Practically all of the films which teachers refer to as 'technical' may be classified under the two headings *discoursive* and *factual*," I answered. "They comprise the majority of films which have been produced for educational purposes. A *discoursive* film is characterized by a strong similarity in style to the essay or lecture. It presents a topic in a logical, systematic, and authentic manner. It is informational, and it also gives training in following the reasoning of an orderly presentation. Its chief value to elementary teachers is that it may be used to give a quick overview or summary of a unit. It may also be used in place of a field trip. Good examples of *discoursive* films are *Truck Farmer,* by Encyclopaedia Britannica and *This Is Soil,* by Films Incorporated.

"The *factual*-type film differs from the discoursive type in that it presents an episode or a series of episodes in an encyclopaedic manner but does not attempt a systematic treatment. Newsreels and many travelogues are typical of the factual type. The films, *Beach and Sea Animals,* and *Shelter,* by Erpi, are good examples. The principal value of the factual film is to provide direct background information to assist in the study of a unit or topic. Factual films bring into the classroom experiences which would not otherwise be gained except from direct observation or from laboratory equipment. They furnish the raw materials for thought. Suppose an elementary teacher desired to give sixth-grade pupils the travelogue type of information about Latin America. *South of the Border,* by Walt Disney, would serve the purpose.

"Many of the discoursive- and factual-type films cover too much ground and tend to be dull; thus they should be shown more than once, and the class should be carefully prepared in advance. During the second showing, factual films, in particular, should be stopped at the end of each episode for a thorough discussion; otherwise the pupils may become confused. At times, only the one episode in the film pertinent to the lesson should be shown. For example, I recently observed a fifth-grade lesson on Mexican life in which an episode showing a market place in a Mexican village was all of the total film that was used during the period, because the topic of the lesson was marketing."

"What are the other types of educational films?" Miss D—— interposed. "You said that there were twelve and so far we have talked about three."

"The other types of educational films," I replied, "are the *dramatic,* the *emulative,* the *incentive,* the *problematic,* the *drill,* the *rhythmic,* the *evidential,* the *therapeutic,* and the *participative-enjoyment.* Of these, all except the therapeutic type have significance for elementary education."

"How do you define these film types?" asked Mr. K——.

"In brief," I answered, "the *dramatic* film is one which was produced for theatrical entertainment, but which in original or excerpt form is used in schools for either the study of drama or to develop attitudes toward theatrical motion pictures. The *emulative* film shows how to perform an act of skill or demonstrates patterns of behavior which the learner imitates. The *incentive* film motivates action in the direction of developing attitudes, character, morale, and emotional response. The *problematic* film presents problems for discussion and solution. The *drill* film sets forth repetitive exercises in which the learner participates during the showing of the film. The *rhythmic* film is used to achieve artistic effects and to develop aesthetic responses. The *evidential* film is used to record scientific data for study and analysis. The *therapeutic* film is used in medicine in connection with the rehabilitation of psychoneurotic patients. And the *participative-enjoyment* film is used to lead groups in singing or similar responses."

"Are there films in which these types are combined?" Miss B—— asked.

"Yes," I said, "for example, the Frith production, *Patty Learns to Stop, Look and Listen,* combines the narrative and incentive types."

"How is use related to the different types of films?" Mr. L—— inquired.

"Suppose a lesson on good manners was indicated," I continued. "The teacher would select an emulative film such as *Johnny Learns His Manners,*

by Pictorial Films. If a lesson on safety was desired, the narrative-incentive film previously mentioned, *Patty Learns to Stop, Look and Listen,* would be a good choice. If multiplication of fractions was under consideration, the Johnson Hunt factual film *How to Multiply Fractions* would aid."

"I get it," said Mr. L——. "Each type of film is adapted to a particular type of lesson."

"In general that is true," I said, as the discussion came to a close. "The types may vary somewhat in use, but the main point is that the educational value of a film depends on using the kind of film best suited to achieve the purpose which governs the lesson. No one type of film can be adapted to all types of lessons. The emergence of differentiated types of educational films connotes substantial progress in harnessing the motion picture to requirements of education."

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Fifty colored "slides." Cost? Practically nothing! Filing space? An envelope! Preparation? A pair of scissors! And the result? Smooth, easy, projection with no light glare from the depressed platform as the pictures are exchanged, and no picture flutter. All this is offered to anyone who has an opaque projector at his command.

Simplified Opaque Projection

By
ALLEN M. BURNHAM
The Instructor, Vol. 62, No. 5, Jan., 1953. Pp. 22-23.

Instead of fifty colored slides, the number could easily be two hundred or two thousand! Not only colored slides, but any picture, diagram, graph, or printed item in a newspaper, magazine or book is potential material for projection through an opaque projector.

No pasting, stapling, or mounting is necessary, and the pictures can be used in the opaque projector as readily as 2″ x 2″ or 3¼″ x 4″ slides in a lantern-slide machine. Even postage stamps can be projected without further handling.

First, cut out any pictures or diagrams that would be helpful to your class today, tomorrow, or next spring. Don't be concerned with the size, even if it is smaller or larger than the opening at the base of the housing. This housing partly determines the size of the projected image; however, 9″ x 12″ is the *maximum size* that the picture can be. Larger pictures can be trimmed to the 9″ x 12″ size without losing too much detail.

Now get 9″ x 12″ envelopes, or any convenient size. In the upper left-hand corner print the subject headings for your pictures: CANADA, CONSERVATION, BIRDS, WEATHER, PAINTINGS, FIREMEN, TRANSPORTATION. Of course envelopes for

additional subjects will be added as your collection increases in volume and content.

You can number the pictures before filing them in the envelopes. If you decide to add a new picture later, between 24 and 25, for example, just print 24A on the new picture. Using this simple numbering scheme, you can add or delete at will. If, for instance, you take out Number 17 from a series, the pictures will still follow in order—15, 16, 18, 19, and so on. In this way it is easy to keep your collection up-to-date, and to substitute better pictures at any time you wish.

If preferred, the pictures can quickly be mounted on construction paper by using a stapling machine. Pictures mounted on standard-size paper are easily handled and filed. Stapling is more satisfactory than using paste, glue, or cement because adhesives dry out and release the picture, particularly when the pictures are used with the opaque projector.

There is one slight objection to the use of staples. When a number of staple-mounted pictures are placed in an envelope or folder, the staples from one picture will sometimes cut into or dent another picture. However, this is a minor objection compared to the convenience and the time saved. In any case, no pictures are ever marked so much that their use is affected.

To use your collection of pictures to the best advantage, it will be necessary to make two "adaptojectors," at a cost of perhaps fifty cents each and fifteen minutes' work. Once made, they are good for years.

The device is constructed by hinging a 9″ x 12″ piece of window glass on one 12″ side of a 9″ x 12″ piece of good quality cardboard.

The hinge is made by running a strip of cloth adhesive along the cardboard at one edge so that one half of the width of the tape projects. Then attach the glass to this exposed tape. Run a second piece of tape on the other side of the hinge for sturdiness.

Then, run a piece of the tape around the three exposed edges of the glass for safety and a neat appearance, folding half of the width over on each side.

To use the "adaptojector," put the unmounted picture between the cardboard and the glass. Then slide the whole thing into place across the platform of the projector. While the class is looking at the picture on the screen, pick up the next picture, and place it in the second adaptojector. Putting a picture into a frame while another is in the machine soon becomes so mechanical that you can do it while talking about the picture on view.

When you are ready to show the next picture, place the edge of the adaptojector against the edge of the one already in the machine and push the new subject into place. With your other hand, catch the

one that is pushed out. Then remove the picture from the adaptojector, put in another, and you are ready for the next change. With very little practice you can change pictures as rapidly as with lantern slides.

The operator will find that if he stands back of the opaque projector, and a little to the right, he will be in a comfortable position. By using this device you can center a picture so quickly that there is no discomfort or annoyance on the part of the observers.

For some learning activities, it may be desirable to project a picture so that the caption doesn't show. The children can take turns identifying the subjects. Later, they could read the captions after you adjust the picture so the caption is again visible.

If the picture to be used is smaller than the opening at the bottom of the housing, center the subject on the cardboard. If the picture is larger than the opening, move the picture in the machine until the part you want shows. You can move the frame back and forth or from side to side so the class can see other details in the picture. This slow movement to show all parts of a large picture such as a landscape has a pleasing quality—as though the eyes were moving over the scene itself. You may view maps the same way.

You can show two small pictures at the same time by placing them side by side on the cardboard and closing the glass down upon them.

It is often desirable to show things as small as postage stamps. Just center the stamp on the cardboard, lower the glass, and slide the frame into position. Leaves may be handled in a similar way. The glass holds the leaf flat. Fir and spruce needles may be projected by dropping a few on the cardboard and covering them with the glass.

The adaptojector is especially handy when you want to use a pamphlet without cutting the pages. Just open it to the page you desire, and place it between the glass and cardboard. After it is in the machine you can move the pamphlet to show any part of the page.

Among the advantages of using this device are these. The picture does not flutter in the wind from the cooling fan; there is no blank time or space on the screen while pictures are being changed; and there is no light flash each time a picture is changed, since the platform is not depressed between the changes.

If you are wondering whether the glass will break from the heat, I can assure you that in my experience it never has. Sometimes people ask if the glass will reflect light from its top surface so that the image on the screen will be less bright. Actu-

ally, no difference can be detected by the eye between images projected with the adaptojector and those projected without it.

Think of it! You need only an opaque projector, pictures from stamp size to 9″ x 12″, and two inexpensive homemade adaptojectors to teach or treat your class with appropriate pictures.

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There are some enthusiastic school people, both teachers and administrators, who call radio, as it is used in the classrooms of America, "the fourth R." To many this means that radio has become significant in the total learning process. Whether or not it deserves this so-called distinction, I think, is directly in relation to the discrimination with which it is used by the educators who have recognized radio as one of the basic tools of education.

Radio's Challenge to the Classroom

By
PATRICIA L. GREEN

Radio has developed into the pulsebeat with which life in many an American home has become completely synchronized. It always startles me, just a little, to read that there are more radios than bathtubs and "other necessities" in the United States, and that, on the average, children listen to the radio for more hours a day than they spend in the schoolroom. (Television in some areas may soon replace this "radio statistic.") To us as teachers, the challenge of this "fourth R" looms large, for if we are interested in all factors affecting the lives of the young people with whom we work, we cannot afford to ignore the potent influence of radio.

When a teacher surveys the modern tools of learning and recognizes radio as one of the most challenging, how can he utilize it in and out of the classroom with skill and effectiveness? First he must decide in what learning situations radio can do the job of achieving teaching objectives *better* than any other tool. This is how teachers choose any one of the countless tools of instruction—a book, map, globe, picture, diagram, model, record, film, or field trip.

In school systems where there is a school-owned radio station there will be a wide variety of good broadcasts which have been planned for classroom use in almost all areas of the curriculum. In cities where no educational radio station is located, many commercial stations offer listening fare which can be utilized by the interested and alert teacher for classroom listening or for out-of-school assignment.

Teachers have discovered that a radio broadcast can enrich the learning experiences of young people

because of its alive quality, its dramatization of fact. The unique "on-the-spotness" of radio gives every listener the opportunity to "be there" and this constitutes its great appeal in the learning experiences of our girls and boys.

Each teacher must ask himself, after listening to several good broadcasts, and experimenting to discover the effectiveness of their use, "Which programs are best suited to the interests and maturity of the group with whom I'm working?" If the children also share in evaluating tools of learning, then the selection of a broadcast, or transcription of it, and its ensuing utilization, become the kind of teaching we want in today's schools.

The guiding principle for utilizing radio programs is not elaborate. Just as we prepare children for other learning experiences, so we must prepare them for listening to a broadcast if they are to receive the maximum benefits. School radio stations issue broadcast manuals or program summary sheets so teachers may preview the programs as they do a set of slides, a film, or a new book. Vocabulary helps, suggested activities to be used before and after the broadcast, and a list of available supplementary instructional materials assist teachers in using a program to its fullest. These suggestions should be *adapted* not *adopted*, by the skillful teacher. Commercial radio stations often issue publicity releases or content synopses concerning their program series which can be secured.

Enriched learning experiences result from lively class discussions in which pupils are stimulated to research and careful evaluation of the ideas and facts they have heard in a radio program. Often student committees, whose members change from week to week, lead the discussion periods after the broadcast. A development of language arts, skills, and creative expression, both literary and graphic, are natural outgrowths. There are innumerable concomitant learnings inherent in skilled utilization of radio programs. Children take from a broadcast what they, with the guidance of good teachers, bring to it and make of it.

No less important than utilization procedures is the physical setup of the classroom for listening, and the quality of the instrument for receiving the broadcast. A noninterrupted listening period, with consideration for others' listening, is essential. Pupil committees tune in the radio after posting an attractive pupil-made sign on the door with such words as:

RADIO PROGRAM
PLEASE DO NOT ENTER

The teachers must be sure that the reception of the classroom radio is of high quality. Noisy reception from a poor radio destroys the best-laid listening plan.

Three other valuable classroom tools closely allied with radio are the 16" transcription, the tape recording, and the wire recording. They capture the fleeting "now" of a broadcast or recorded event for the teachers and pupils to hear, discuss, and hear again at a later time.

What about the teacher's opportunity to utilize young people's experiences in their out-of-school or leisure-time listening? Teachers have long been concerned with the guidance of leisure-time reading. How many teachers have utilized their opportunity to guide leisure-time listening, and have felt the necessity and challenge for building discriminating listening habits? There is no surer way of kindling an enthusiastic discussion than to share radio program "likes and dislikes."

A teacher's sincere interest in a juvenile's favorite program may open the door to that juvenile's trial of a teacher's favorite broadcast. Widening the listening diet and enriching the daily program menu come naturally when class time is devoted to "What programs do you like best?" "Do you listen to........ ....?" "I enjoy ....'s program on Monday nights," or "Have you ever heard ....? Try that one some Saturday morning." A leisure-time listening inventory or chart made by each child in the class (and the teacher) graphically shows in what direction each listener's habits are taking him. It's fun and it's an interesting eye opener!

A list of the radio programs heard by pupils in school could profitably be taken home to their parents, who might enjoy listening to the same programs after their children's recommendation. What fine sharing experiences this engenders between children and parents, and what opportunities are offered for building discriminating listening on the home front as well as in school.

The consideration by students of the medium of radio itself as a powerful propaganda force, and as a tool for rapid mass communication, could well constitute a rich learning experience through a unit of work, whose possibilities are too numerous to be more than mentioned here.

The third phase of radio's challenge to the classroom involves the "wonders" of pupil participation in radio production. There is nothing quite like the magic of standing in front of a microphone, be it on the school's public-address system, or on an actual broadcast mike in a radio studio! Both performances entail the following activities for one or more of the group; carefully selecting and rejecting various subjects for the program, doing research to secure the information to be included in the broadcast, writing the script, choosing the cast, providing the music, inventing the often ingenious sound

effects, arranging for the scripts to be typed, preparing publicity, and finally producing the program.

There are myriad activities offering a challenge and satisfaction to people of varying capabilities and interests. Whether the group "broadcasts" to the other classes within the school, using the public-address system, or journeys to the school or commercial radio station for presentation of the program to all the schools in the community, the experience is richly rewarding to pupils, teachers, and parents.

The production of radio programs of all kinds—dramas, book reviews, newscasts, musical shows, round-table and panel discussions, interviews—all give tremendous impetus to learning, whether or not they are an outgrowth of a unit of study in which the group has been participating.

What the child experiences in radio participation in the school will carry over into his leisure-time activities. He will be a more discriminating listener and will choose his programs more carefully . . . and isn't that one of the aims of your school's radio program? If the thin, sensational plots become so obvious that they are boring, and if in turn the child finds genuine pleasure in listening to good music or having good music in the background while going on with some other hobby, he will have achieved greater emotional security. If he voluntarily turns to news broadcasts, round-table discussions, and other worth-while presentations he is developing interests that will go with him throughout life.

Willard Goslin once said of radio, "It is doubtful if there is another avenue of learning which is so readily acceptable to boys and girls of all ages and all degrees of ability and varieties of interests." So, whether students are on the receiving end or the participating end in this many-faceted means of communication, radio offers itself as a catalyst to our programs and provides an unlimited challenge to modern education.

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> "When arithmetic is taught meaningfully, it is interesting in its own right . . . in the primary grades, arithmetic can be made interesting and popular by presenting it concretely so that number relations are really understood."
>
> G. T. Buswell

C. TEACHING ARITHMETIC

What is new in arithmetic?" is a question often asked by teachers of arithmetic. The answer is "Nothing." We use the same number system that has been used for centuries. However, this does not mean that there is nothing new to learn about the *teaching* of arithmetic.

How a Pupil Learns Arithmetic Meaningfully

By
FOSTER E. GROSSNICKLE

Arithmetic should be meaningful to the pupil. There is almost universal acceptance of this principle, but there is great diversity of opinion concerning how to put it into practice. Before we can determine the characteristics of meaningful learning, we must consider essential materials.

There are three kinds of materials to be used in a program for teaching arithmetic. They are: *manipulative* materials, *visual* materials, and *symbolic* materials.

Manipulative materials are those which may be moved, touched, or manipulated. They may be classified into two groups. Those in one group have social significance. Such things as a clock dial, familiar measures and weights, and toys are representative of this group. The other group includes materials which have no social significance. They are intended only to teach some phase of number. An abacus, place-value pockets, and fractional disks are representative of this group.

Visual materials are those which are expressed in picture or graphic form. They include pictures, posters, charts, graphs, films, and filmstrips.

Symbolic materials are those which are expressed in symbols such as our arabic numbers. Standard arithmetic textbooks are full of such materials.

Each of the three types of material has a function to perform in a program which stresses meaning in arithmetic. The omission of one or two of them will make it difficult for the pupil to learn the subject meaningfully. In many schools, almost all of the work in arithmetic deals with symbolic materials. A program of this kind gives undue emphasis to repetition as the chief means of learning. On the other hand, a program which gives undue emphasis to the use of concrete manipulative material is equally faulty. Therefore, it is essential for a teacher to understand the function of each kind of material in a program designed to teach arithmetic meaningfully.

BASIC PRINCIPLES OF LEARNING

It is not possible to discuss all of the basic principles of learning in a brief treatment of this topic[1] . . .

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1. For a more exhaustive statement see *Fiftieth Yearbook of the National Society for the Study of Education*. University of Chicago Press, Part II, Ch. 9.

We shall be concerned here with two. They are:

1. More effective learning results from discovery than from repetition.

2. There are stages or steps of growth from an immature level to an adult level of mastery.

LEARNING THROUGH DISCOVERY

The operation of the principle of discovery implies that a pupil uses either manipulative or visual materials, or both. Seldom, especially in the lower grades, is a pupil able to make a discovery of a mathematical principle when he is dealing solely with symbolic materials.

To illustrate, let us consider how a pupil can make discoveries of mathematical principles by using manipulative materials to represent basic facts in addition. If a pupil has six markers, such as disks or cards, he can arrange them in different ways to form two groups. He will discover that he can form groupings, of 1 and 5, 2 and 4, 3 and 3, 4 and 2, and 5 and 1. Then the teacher asks leading questions about the groupings, to help the pupil discover what happens to the size of each group as one marker is taken from one group and placed in the other group. He should also discover that in one case the number of markers is the same. Then, when seven markers are used, he should discover that it is not possible to have the same number of markers in each of two groups.

If the pupil does not know in what different ways a number may be grouped, he uses concrete material to find the answer. If he does not know the sum of a grouping, such as 3 and 5, he should find the answer by using manipulative or visual materials.

This plan is different from the one in which the teacher tells the answer and the pupil memorizes the number fact. In the latter technique the teacher asks questions, such as $3 + 5 = ?$ and the pupil gives the answer. Chance plays a great part in the response because the pupil may guess the answer or he may give an incorrect answer. So in order to avoid these undesirable responses, the teacher has the pupil study a fact, such as $3 + 5 = 8$, until by repetition he has an automatic control of it.

The classroom must be a laboratory which is equipped with certain essential materials in order that the pupil may make discoveries of mathematical principles. It is not possible to teach arithmetic meaningfully to most pupils when the only instructional equipment in the classroom consists of paper, pencil, chalk, and a blackboard. These are essential materials, but they must be supplemented by other materials, manipulative and visual, which are specifically designed to help the pupil discover relationships among numbers.

According to the plan of discovery, illustrated above, the pupil uses manipulative or visual materials to discover a basic number fact. At the same time, he discovers related facts. For instance, he learns how two groups may be formed into one larger group or how one group may be separated into two smaller groups. Thus, the addition facts and the corresponding subtraction facts are learned at the same time. The one learning supplements the other. The pupil should discover that addition is the process of putting groups together and that subtraction is the process of separating a group into two groups . . .

LEARNING AS GROWTH

The second principle of learning assumes that learning is a process of growth from an immature level to an adult level of operation. When a pupil uses manipulative and visual materials, he operates at an immature level. He reaches the level of mastery when he deals effectively with symbols. Then he performs a process with accuracy, a reasonable degree of speed, and with assurance that his answer is correct.

There are different stages of growth which are in evidence in learning the process of compound subtraction. First the pupil should find answers by use of objective materials. Then he should make a symbolic representation of the process, separating the units column from the tens column, and crossing off and rewriting as indicated.

$$\begin{array}{rr} 2 & 12 \\ 3 & 2 \\ -1 & 8 \\ \hline 1 & 4 \end{array}$$

This procedure is often referred to as a "crutch," or something to be avoided. Instead it is a visual aid and a vital help in learning.

From this stage, the pupil should study the process in his textbook and eventually deal with symbols at the adult level of performance. If he persists in using visual aids, he will not grow in his ability to work with symbolic materials. Under such conditions a visual aid does become a crutch, which is objectionable because it is not conducive to growth in dealing with an abstract process.

Drill in abstract form is essential for mastery at the adult level of performance. It should be noted, however, that drill is not given until a pupil has the background and experience with objective and visual materials that is necessary in order for him to understand a process or operation. Then drill is as essential for developing mastery as the use of objective and visual materials was for developing understanding. ✪ ✪ ✪

We have no long-term studies in arithmetic research on the development of quantitative abilities of the same children, comparable to studies of other aspects of growth and development. Research in arithmetic consists mainly of brief, cross-sectional investigations, inventories, short experimental studies,

Some Implications from Research in Arithmetic

By
LORRAINE SHERER
Childhood Education, Vol. 29, March, 1953. Pp. 320-324.

and test samplings of children's concepts, interests, uses, and abilities. We need to assess what they mean viewed together.

In this article, an attempt is made to view arithmetical research in broad perspective and to single out some of the most important highlights. Implications have been drawn from four types of research: the development of concepts; children's interests in arithmetic in their out-of-school activities; children's uses of arithmetic in their school activities; and children's quantitative abilities.

What Children's Interests Show

One fact that stands out clearly from the studies is that children's interests in arithmetic are primarily functional and children use arithmetic functionally in two ways: (1) in thinking and communicating facts and ideas about number, size, form, and position, and (2) in solving their own particular problems, which may or may not require computation.

Communication is a dominant interest in all grades; in the lower grades it is a predominant interest. Children ask questions: how many, what order, which one, and how much. They talk about the shapes of things. They use a great variety of expressions for position and positional relationships. They compare and estimate. In short, children use arithmetic functionally, as do adults, in thinking and communicating quantitative facts and ideas. The difference is degree of maturity.

Problem-solving is used in a wide variety of situations, accompanied by much talk, especially among younger children. Interest in computation increases with age. The activities determine the types of arithmetic which children use and how they use it. Another fact, equally clear, is that children use a breadth of arithmetic, or "mathematics" — number, measurement, form, and position — in their activities.

Both outside of school and in school, children use *number* in all kinds of ways, in its cardinal, ordinal, and denominate senses. Kindergartners and first graders do a great deal of rote and rational counting, just for fun. They count by ones, twos, fives, and tens. In situations calling for computation, children of all ages use integers and the processes of

counting, adding, subtracting, multiplying, and dividing. Their proportional use of these fundamental processes is not clearly established. They use a few fractions, and simple decimals when dealing with money and speed. How well they use number is not known.

Children are interested in *measurement*, "how much" of almost everything — money, time, speed, distance, weight, liquids; how big, how high, how far, how fast, how heavy, how long, what time, ad infinitum. They use denominate number in exchanging ideas, and in connection with activities which require actual measurement. They compare, estimate, and use instruments of measure. Among children of first and second grades, interest in and uses of measurement and of number are about equal. Among third and fourth graders, measurement exceeds all other interests and uses. Fifth and sixth graders show sustained interest in measurement; they use denominate numbers in simple computation.

Only two studies include form and position, but these show that children are much interested in both the shapes and the positions of things.

The studies give a rough picture of children's interests in voluntary uses of arithmetic. Trends are detectable, and clues suggested. Teachers can, however, find out about the quantitative interests and behavior of the children by setting up studies of their own.

Implications from Research

Taking what we do know of children's interests as a basis for further study, there are implications of ways in which school people could use children's interests to generate interests in learning arithmetic:

1. Recognize that children, from early years on, are becoming aware of the quantitative characteristics of their experiences—number, size, form, position; that they are endeavoring to understand these quantitative aspects; that they are learning the words and symbols which express these facts and ideas.

2. Provide all possible assistance to children in their efforts to think quantitatively and to communicate these facts and ideas.

3. Supply breadth of mathematical experiences in all grades, emphasize measurement in the grades where it is an all-out interest, and give attention to the development of understanding all along the line.

4. Take into account that children's needs for computation and their abilities to reason increase as they grow older, and match expectancies to the tempo of expansion of these needs and abilities.

5. Recognize that number, to be serviceable to children in thinking, communicating, and computing, must be sufficiently meaningful to them that they use it volitionally in their own real situations.

Arithmetic has been regarded as a skill subject, with high priority on computation. If it is conceded to be a system of thinking, of which computational skills are but one important part, the same procedures will apply to it as to development of meanings and of reasoning along other lines.

The process which children use in developing quantitative concepts and skills are not clearly defined in arithmetical research, but clues support the suggestions just made . . .

The most significant implication from studies of children's interests in and uses of arithmetic is the importance of quantitative thinking and communication throughout childhood . . . Understanding quantitative words precedes the understanding of their abstract arithmetic counterparts.

Among young children, quantitative expression develops as a normal part of language development. As they become familiar with the meanings of things, they gradually become aware of quantitative characteristics, as number, spatial relations, and size. At all ages, some children are more aware of quantitative characteristics than are other children, and deal with them more maturely. Research shows this . . .

During the first years in school, children are often expected to deal with abstractions in reading and writing and sometimes in arithmetic. This is too heavy a load for many of them. They need many concrete experiences, and much help from the teacher in discerning quantitative characteristics in these experiences. They need help with quantitative words and ideas, and ample opportunities to use these words and ideas in play activities, spontaneous talk, and interesting discussions.

Such experiences as trips to markets, airports, and post office, the reproduction of such places in authentic play-worthy constructions, and the interpretation of the activities of the people through dramatic play, supply vivid quantitative perceptions and stimulate quantitative thinking.

First-grade teachers know that children are helped if their concrete quantitative experiences are related, recorded, and then read. They make experience charts every day. Children see in writing what they know and have tested in experience, and they recognize the written symbols of what they know aurally and orally. Later, they learn to write their own quantitative ideas. Notation is only one part of the writing.

Quantitative thinking and communication include more than listening-speaking, reading-writing. They include the use of such mathematical forms of communication as tabular forms, maps, graphs, and equations.

Concepts of form, position, and measurement are basic to thinking intelligently about spatial relations, speed, and other magnitudes; basic, also, to using globes, maps, and other means of communication. Do we supply enough concrete experiences as children progress through school and the load of abstractions gets heavier? Are we giving children adequate help in measurement? Should third- and fourth-grade programs in arithmetic be examined to be sure we are not bearing down heavily on abstract number combinations during a period when children are most receptive to assistance in measurement and denominate number? What does the paucity of data on form and position mean?

Children in the lower grades use such tabular forms as calendars, tables of contents, schedules of daily programs, lists of "things we need," simple inventories, and tables in connection with their experiences. They are making maps with concrete objects when they lay out segments of small communities which they have constructed. These concrete maps are forerunners of pictorial maps, which are in turn forerunners of symbolic maps. Equations and formulae — mathematical sentences — should give little trouble if concrete experiences are translated into symbols often enough.

As children grow older, more and more tabular forms, maps, and graphs appear in the books which they are required to use. These books are also heavy with quantitative facts and ideas which require, in order to be comprehended, an ample background of concrete experience and a meaningful quantitative vocabulary. Concept development and accurate terminology are lifelong tasks, but children need all the help they can use.

Research shows that children can understand arithmetic. But—research stresses a longer period of concrete number experiences, and a more gradual transition into abstract number. It emphasizes that *the processes children use on the concrete and semi-concrete levels should be the processes which they will use when dealing with abstract number.*

Measurement is open territory in research. However, since measurement is not a system as is the number system, but several systems, each with its own units and instruments of measure, this aspect can be handled in connection with children's activities.

Several attempts have been made to find ways of relating *number* to children's activities. Numerous researches have been made to find effective methods of teaching number. Most of these have been made on the basis of existing grade placements and subject matter. No one has found satisfactory answers.

The underlying problem of helping children with arithmetic is not simply supplying interesting activities for children, but rather of using interesting experiences as a solid foundation for the development

of understanding. We may find better going *if* communication and quantitative thinking are admitted into the curriculum as a legitimate function of arithmetic, *if* number ideas and skills are allowed to mature gradually, and *if* size, form, and position are admitted as partners of number.

The whole area of the development of quantitative abilities should be studied carefully, and on a long-term basis. Professional literature supplies promising hypotheses, which could and should be tested. Arithmetical research supplies many clues, but insufficient scientific evidence to settle such questions as how children learn arithmetic successfully, what to expect at different ages, or how success or failure in developing quantitative competence affects children's success or failure in other aspects of development. We need a teamup in research—between teachers who understand children and experts who understand arithmetic—to explore this aspect of child development.

Editorial Note: In the original article 43 references on research in arithmetic are cited. The bibliography is omitted here for lack of space.

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D. TEACHING ART

Educators know what they mean when they talk about reading, writing, and arithmetic. It is harder to know what is meant by art. With all of the varied efforts on the part of artists today, there would be many definitions of art by artists, educators, children, and parents.

Art Should Reach All Elementary School Children

By JESSIE TODD
The Instructor, Vol. 62, No. 7, March, 1953. Pp. 65, 77.

To some teachers, art still means "busy work." In some homes children use crayons to fill in pictures in color books. In many schools children still trace patterns and paste them on the blackboards and windows to make borders. In store windows we see plaster figures for sale and the colors to be used for painting them. This sort of work requires no planning on the part of the doer. It is therefore not art.

In other schools children use enlarging apparatus to make maps. A printed map six inches long is often enlarged to a size of seven or eight feet. These maps are painted and used in geography classes. It is not the aim of this article to evaluate this work as an aid to teaching geography, but it is not art. The children enjoy the enlarging process. They enjoy painting the states and lakes. But art is more than enjoyment of a mechanical process. Enlarging a map requires no original drawing on the part of the doer. It requires no original arrangement, for the lines of the states naturally have to be in a definite place.

Some teachers plan the art period so that children in grades one through four may spatter, scribble, and visit. Some visit so much that they do very little with their hands. The teacher is reluctant to criticize or even urge a child to do better. The child is supposed to be "happy" in the "art class" and use the class as relaxation. The writer wishes to say that this is not art. Art is not merely scribbling, spattering, visiting, and relaxing.

Small children enjoy making progress guided by a wise teacher. They enjoy the stimulation of a teacher who shows them occasionally how to do something. Let us take one example.

The children have been modeling many little animals and people. The ears and legs have been falling off the animals. The heads and arms have been falling off the people. The animals and people have been modeled too thin.

Some teachers take the point of view that these pieces of modeling can keep falling apart year after year until the child decides to model them thicker. The writer wishes to disagree with this point of view. To be sure, many children learn after several efforts that the animal will not break if he is modeled thicker. Others give up because they lose interest. A half-hour demonstration by the teacher will make it possible for all the children to model an animal or person that will not break. No two children will have results exactly alike.

What sort of demonstration will make this come to pass? Let us be specific. The teacher may begin with a lump of clay as large as an apple, pull out the head of a duck, and then pull out his bill. Later she may suggest the tail. Perhaps she will make the bill very thin and show the children how it breaks off, then model the bill thicker and let the children feel it. She may move the head so that the duck is looking to one side and then push the head so that the duck is looking up. She may say, "You could make some birds instead of ducks and put topknots on their heads or many other things you can invent. Your birds can be imaginary."

Then the teacher may take a lump of clay, pull out a dog's head and then his ears, pull out his tail, and pull out his legs. An Eskimo dog has decided points which make him easy to model—his tail which curls, his ears which point forward, and his face which is pointed. The Eskimo dog can be mussed up and a spaniel with drooping ears modeled. Thus the children see how changing the kind of ears on the dog makes him into a different kind of dog. The teacher may say, "You can make Scotties, dachshunds, toy terriers, great Danes—all sorts of dogs. And you can model cats too." The teacher may quickly pull

out the rounded head of a cat. Perhaps she may arch his back like that of a cross Halloween cat. Then she may quickly model a giraffe and an elephant. The children have now had a demonstration of how any four-legged animal can be modeled by pulling out head, ears, legs, and tail.

Perhaps the teacher says, "Now I'll model some people an easy way." She takes a lump of clay taller than it is wide, punches in a place for the neck, and pulls out two arms. Next she punches in a place for the waistline of an old-fashioned lady whose skirt touches the table. The teacher may then round out the head better and add hair. She may move the arms first this way, then that, quickly put on a big hat, take that off, and put a bonnet on her. The clay may be mussed up, and a man made out of the same clay. She may punch in the neck of a clown, pull out his arms and legs, add a collar or maybe a pointed hat and ruffle. Then he can be mussed up.

Some reader may say, "How can this be done in a half hour?" It can if it's done in a crude manner. It will help the children more if it is done quickly. They will be more eager to model something themselves and finish theirs better.

The teacher by her demonstration has made it possible for all children to succeed. No child feels that art is something he cannot do. He knows that he can do it. He saw how easy it was for the teacher. He can make a cuter dog than the teacher. After this demonstration there is new interest, originality, and enthusiasm. Many children for the first time see the possibilities that are hidden in a lump of clay.

This demonstration does not curb the inventive spirit. There are many days when children model things that break, such as a baseball diamond, an airplane, a snake, but the teacher's demonstration helps many of the creative children to make things more solid. It takes effort on the part of the teacher to counteract the inferiority feeling built up by many parents who say, "Our family has never been able to do anything in art. We can't expect Johnny to do anything."

Many children learn to draw if the teacher helps them. Let us take the drawing of people. Talented children draw without being taught. The majority of children at the age of eight become discouraged unless they see progress. Teachers have many ways of helping children draw the human figure. Sometimes children skillful in this work can draw while the other children watch. Sometimes children can run and play games and then try to draw themselves in different positions. The results can be evaluated.

Children can be shown that the arm bends at the elbow, that people have shoulders, that their arms do not grow out of their sides near the waistline.

Here again some educators say, "Don't show children these things. In time they will find out." Again the writer disagrees. Children are eager to learn how to draw themselves. When they can draw people they have power to express their ideas, for most of their ideas include people. When they make progress they feel sure of themselves.

Children like to express themselves with a variety of materials. With transparent colored inks, they can make abstract designs for stained-glass windows. With colored chalk, they can rub colors together for sunsets and forest fires. With tempera paints and large brushes and pieces of paper, they can make scenery for the social-studies or history play. With finger paints, they can make emotional patterns and textures. With crayons, they can quickly tell a story about a field trip and make pages for the books written in the classroom. With paper fasteners, string, shiny paper, and paste that really sticks, they can experiment with modern design. Plaster is useful for candlesticks and plaques. The paper sack spells adventure when used for a fierce Halloween mask.

Why is it that all elementary schools do not attempt to have art reach every child? The care of materials takes much time. The materials cost money. The work is not successful unless the teacher is very enthusiastic. The children lose interest unless they make progress. The majority of curriculums allow too little time for the children to learn how to do even a few things well.

Unless a child does learn to do a few things well, he becomes discouraged. Some teachers don't believe this. They believe that children can putter and play with materials for a little while in first grade and for a little while in second grade, and again in third. What they don't see is that in the fourth grade the children care less about playing with materials because they "did the same thing last year and the year before."

There is no substitute for progress in any school subject. If art is to reach every child, there must be teaching and learning.

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E. TEACHING HEALTH

In this health unit, pictures, filmstrips, graphs, charts, excursions and a store were combined with real life experiences to help children to learn what foods to eat every day and to actually eat them.

One of the basic activity units which can be adapted to any grade or group is a unit on nutrition. In our study we combined nonprojected visual materials with actual experiences. Our unit was fun to carry out, for little children love to cook; they take

delight in smelling and stirring and tasting the food they are preparing.

Improving Health Through Nutrition

By
KATHERINE DISSINGER

Objectives

Although there were subject-matter correlations, this was fundamentally a health unit. Since it was developed in a primary grade, the nutrition facts presented were naturally, on an elementary level. The main objective was to help the primary children learn what foods they should eat every day and to help them actually eat these foods. (Without any carry-over in real life such a unit would prove to be valueless.)

The first day that each child in the class was weighed we made a simple graph showing the weight of each child. The second time the children were weighed, each of those who had gained weight added a block to his line in the weight graph. Then there was a discussion as to why some of the children had gained and others had not.

The children were led to suggest that the reason some had gained weight was because they ate more vegetables and fruit and drank more milk than the others did. Then a discussion period followed in which health and its relation to diet was discussed.

Understanding Nutrition

A. *Pictures and filmstrips.*

The pictures in the Visualized Curriculum Series were used, and through them the primary children gained many understandings which would not have been possible otherwise. When showing the pictures, an attempt was made to have the children make as many observations and deductions as possible. The teacher also endeavored to relate the picture scenes to the children's experiences, and to follow these with further related activities.

A filmstrip, "Food for Health," was shown. This picture was about two children who visited their grandmother and grandfather on the farm and about the various healthful foods they were given to eat while there.

The class brought in pictures of the different kinds of food the children in the filmstrip ate, and with them they made a pictorial food chart showing the seven basic food groups.

Each day the class discussed our cafeteria menus which were posted in the room, and the children located on their chart the foods on the lunch menu.

B. *A health train.*

Because the children in the class had collected more pictures than they could use on the food chart, it was decided to make a health train depicting each of the seven basic food groups. Each child chose the committee on which he wished to work, and each committee brought in a shoe box, painted it, and attached round cardboard wheels. Soon each shoe box resembled a railroad car. The boxes were appropriately labeled and the pictures pasted to the inside of the boxes. The engine which pulled the cars was an oatmeal box painted black, with wheels attached with paper fasteners.

C. *Food check charts to take home.*

Each child was given a hectographed food chart with a note to his parents telling of the nutrition unit and asking their assistance in checking on the chart the different foods which the child ate.

D. *Cooking experiences and menu planning.*

At various intervals during the activity the children engaged in actual cooking experiences. A hot plate and utensils were brought in and the types of food that should be included in the breakfast menu, such as wheat cereal, stewed red apples, and cocoa, were cooked and served.

The children looked at nutrition picture-posters and discussed what made up a good lunch and dinner. The class planned several lunch and dinner menus. Cut-paper posters showing the foods that should be included in these meals were made.

E. *Excursions.*

The children enjoyed a visit to a milk plant where they saw milk being bottled and pasteurized, cheese being made, and butter being churned in a huge churn. At a bakery they saw bread being mixed and baked, and cookies and cakes being made.

The class also visited a grocery store.

F. *Our health store.*

Our health store was simply constructed from orange crates placed on end. Vegetable and fruit bins were built with blocks and the play fruit and vegetables were modeled from clay and painted with tempera mixed with shellac. The prices were marked as in the local stores and the children enjoyed playing store in their health store.

Culminating Activity

As a fitting close for the nutrition unit the children planned, prepared, and served a lunch in their classroom.

The following menu was decided upon: chicken and noodles, carrots, whole-wheat bread, butter, milk, candied apples, and ice cream. Each child brought $.20 to pay for his share of the lunch.

This culminating activity involved much planning and discussion, reading, and number work. The children again chose the committees on which they wished to work. There was a table-setting commit-

tee, a serving committee, and a clean-up committee, as well as a food preparation committee.

A trip was made to the store to purchase paper plates and napkins, and wooden forks and spoons. Bread, milk, and ice cream were bought at the school cafeteria. An electric cooker was brought in, and the day before the lunch was to be served the apple committee peeled the apples and candied them in the cooker. Then they were stored in the school refrigerator. The butter committee also churned the butter in a glass jar the previous day.

The chickens and noodles were cooked and put together casserole fashion by the teacher. The carrot committee peeled the carrots in the morning and they were cooked in the electric cooker.

Before the lunch was served, the children learned the proper way to set a table. They drew diagrams of a table setting, showing where the plate, the silverware, and the napkin were to be placed. They made some clay doll dishes and set a real table which stood below the diagram.

Place mats were made from 12″ x 15″ manila paper. Decorations were made with crayon and the ends were fringed. The place cards were stand-up apples cut from construction paper.

CORRELATIONS

A. *Reading.*

1. Reading captions under pictures on the bulletin board. These were written either by the teacher or the children. The teacher utilized the vocabulary in the basic reading book as much as possible, either to introduce a new word or to represent a familiar word in a different and meaningful way. These pictures were mounted on the bulletin board and changed every day or two. When exposed to enough of this type of thing, children learn to anticipate vocabulary and to read *meaning* rather than words.

2. Reading charts, lists, rules, and so on. Plan charts were printed quickly by the teacher as the children composed them. Then they were put together in our big reading book under the following titles: Weighing, Our Health Train, Making Applesauce, Our Health Store, What We Will Have for Lunch, Things We Will Need, and Manners.

3. Reading records of activities in the form of newspapers called "The First Grade News" which the children composed. The teacher printed the news and the children took it home to read to their parents.

B. *Language.*

1. During conversations in planning periods, these standards were set up.

a) Only one person should talk at a time.

b) The ideas should be clearly expressed.

c) No one person should monopolize the conversation.

2. Composing oral riddles about food to be used as a guessing game.

C. *Writing.*

1. Writing riddles.
2. Writing invitations.
3. Writing place cards.
4. Writing thank-you letters.

D. *Art.*

1. Modeling clay fruits, vegetables, and dishes.
2. Designing a cover for our riddle book.
3. Drawing illustrations for our newspaper.
4. Designing invitations.
5. Making breakfast posters.
6. Making a fruit-and-vegetable border.
7. Making table-setting diagrams.
8. Decorating mats and place cards.

E. *Numbers and arithmetical concepts.*

1. Counting to see how many.
2. Measuring to see how much.
3. Acquiring a larger arithmetical vocabulary.
4. Experiences with scales.

a) Making things on small scales.

b) Being weighed on large scales.

c) Making weight comparisons.

5. Understanding and reading a simple arithmetical graph.
6. Learning to count by 2's.
7. Experiences with money.

a) Bringing money to pay for things.

b) Counting money to see how much we have or how much more we needed.

c) Learning names of pieces of money and value of each.

d) Putting price marks on vegetables and fruit in nutrition store.

8. Experiences with the fractions $\frac{1}{2}$ and $\frac{1}{4}$—cutting apples, measuring fractions of a cup, and so on.
9. Experiences with dozens.
10. Experiences with pints and quarts.
11. Concepts of simple adding and subtracting through meaningful problem experiences.

F. *Social living.*

In carrying out an activity of this kind almost all children show improvement and growth in acceptable social behavior. They learn these things by practicing them.

1. Taking turns—in conversation and in the use of materials.
2. Sharing ideas, as well as aprons.
3. Being polite to others.
4. Working co-operatively in groups.
5. Learning responsibility and necessity of com-

pleting a task for which they have volunteered or been assigned.

6. Learning the correct way to set a table.

7. Reviewing correct table manners and the correct way to hold a knife and fork.

8. Learning the necessity of conforming to behavior standards set up by the group.

SOURCE MATERIALS

There is a wealth of source material which may be obtained free from sources which are listed in books, such as: *Elementary Teachers' Guide to Free Curriculum Materials* (Educators Progress Service, Radolph, Wis.; $4.50), and *Free and Inexpensive Learning Materials* (Division of Surveys and Field Services, George Peabody College for Teachers, Nashville, Tenn.; $.50). The film "Food for Health" is distributed by Curriculum Films, Inc., Long Island City 1, N. Y.

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F. TEACHING MUSIC

Although many teachers use a record player now and then in connection with their music programs, not all are fully aware that there are many possibilities for its use with other subjects as well.

The availability of a machine will, to a large extent, control its use as a teaching aid. If the school machine must be shared by many teachers, or if it is available to each teacher only at scheduled times, many on-the-spot opportunities will be lost. Record playing in one's own classroom, especially where there are young children, is much more satisfactory than going to an especially equipped audio-visual or music room.

The Phonograph in School

By EDITH F. MILLER
The Instructor, Vol. 59, No. 6, April, 1950. Pp. 30, 81.

ACTIVITIES WITH MUSIC

Assuming that you have a phonograph in your classroom, let us consider first its use in connection with the regular music program. This might profitably include such activities as:

A. Hearing selections of great composers, classical and modern.

B. Hearing records made by great artists, vocal and instrumental.

C. Clapping, beating time, or otherwise expressing oneself in simple rhythms.

D. Doing interpretive dancing.

E. Becoming familiar with specific instruments.

F. Having a rhythm band.

There are also endless possibilities for using musical selections in connection with other subjects or activities. Here are a few suggestions.

> The suggestions offered here will enable many teachers to increase their use of the phonograph and broaden the horizons of their children.

A. In opening exercises, instead of having the children sing a patriotic song after the flag salute, play a recording of a vocal or instrumental patriotic number occasionally.

B. At holiday times play suitable selections during work periods when gifts or decorations are being made.

C. After a period of extensive work, marching around the classroom to a spirited piece will relax the children. If more space is available, recordings to which the pupils may skip or dance may be played.

D. If the children have a mid-morning lunch or a noon lunch hour in the classroom, the usual conversation may give way at times to melodies of the "dinner music" type.

E. When the game period must be held indoors, square dances, folk dances, and singing games will enliven a physical-education program.

F. A social-studies lesson that features musical compositions of the country or period being studied will be a highlight of that study and may lead to other activities.

G. For special days, such as St. Patrick's Day, appropriate selections may be played.

H. As an art lesson children may interpret a musical recording in paint, crayon, or finger paint.

NONMUSICAL RECORDINGS

Nonmusical recordings are important also. Social-studies programs are enriched by playbacks of historic speeches, or of radio programs which are pertinent to the topic being studied. Playbacks have two advantages over the radio broadcast—they may be played when needed and replayed as many times as desired.

Stories and folk tales of other countries are valuable in connection with social studies.

Records of bird calls are also available. These help in the teaching of nature study. By playing a bird call and showing the bird's picture at the same time effective learning will result.

The field of children's literature offers many possibilities too. No matter how expert the teacher is as a storyteller she should take advantage of the excellent records now procurable for any age level. Some splendid actors and actresses have made the recordings, and the musical innovations and sound effects make the stories dramatic and appealing. If the children become familiar with these records, they

will ask their parents and friends to buy similar ones for birthday and Christmas gifts.

By borrowing the children's records the teacher may present a wider offering to her pupils. A word of caution is necessary regarding any records, musical or nonmusical, which the children bring in. The teacher must make it plain that she may not be able to use every record brought in. She should plan to play each record privately first to see whether it is worth while for her class to spend time on.

STANDARDS OF BEHAVIOR

What standards of behavior shall be built up for listening lessons?

First, the lessons should always be pleasurable. The children should look forward to them eagerly. The class should sit in comfortable positions close enough to the machine so that everyone can hear. Thus fidgeting, drawing chairs closer, and other problems will automatically be eliminated. If the children can sit on the floor or on mats there will be no opening of desks. If they sit at tables or desks, all books, pencils, and other equipment should be put away.

When children hear rhythmic selections they may sway, pretend to play instruments, tap with one finger, or express themselves quietly as they listen. In any situation where they express themselves to music—whether through dances, singing games, or rhythm-band orchestration — the action must not drown out the sound of the music. There should be no talking, loud laughter, or disturbing noise.

METHODS OF SELECTION

The companies which manufacture records will send free lists of records as well as other helpful material on request. The lists will help the teacher to make preliminary selections so that she will have some idea of what she wants before going to the store to hear the records played. It is important that no records be purchased or recommended without their being heard by the teacher, as there is a wide variation of quality, even in records in the same set or between records made by the same artist. Some stories have been oversimplified or spoiled by poor sound effects.

The teacher who wishes to become more proficient in using the record player as a teaching aid will find helpful books in the public library.

PRESENTING THE RECORD

What is the best way to introduce a record? If the recording is an outgrowth of previous class work, the children will have a background of experience for appreciating it. For an entirely new selection the teacher may wish to give enough background to "set the mood."

I usually follow these steps in connection with presenting a new record.

A. Preparation on the part of the teacher. (Includes selecting pertinent illustrative material and listening to the record chosen.)

B. Showing the illustrative material to the children if desired and giving them a little introduction so that they will have something definite to listen for.

C. Playing the record for the first time.

D. Discussion of the record; questions raised and answered.

E. Replaying of favorite parts.

F. Showing pictures, books, models, or other supplementary material.

G. Playing the record for the second time.

H. More discussion.

I. Playing the record for a final time if necessary.

FOLLOW-UP ACTIVITIES

Follow-up activities may grow out of an interest in a record. In most cases the second or third playing of the record concludes its use, but there will be times when other activities will be a natural outcome.

Such activities may take only a few minutes or may last for several days. In either case further playing of the record will be necessary. This should always be purposeful and never degenerate into passive listening. The children may listen to make a list of characters, to decide on scenes, or to think of costumes or properties if they are planning a dramatization. If they are planning to make pictures or a frieze, they may listen to decide on the parts that would make the best pictures, the colors suggested by the story, the number of pictures to be made, and so on.

Familiar recordings of literature may be replayed as examples of effective storytelling. Discussion of clarity of speech, change of pitch and tempo, modulation of tone, repetition of phrases, choice of words, and similar points should lead to improvement of the children's own storytelling abilities.

Musical selections may also be replayed for different purposes. A record to which the children have always danced may have rhythm-band possibilities. A composition that they have heard and enjoyed as quiet music may be used in a new way when the life and works of its composer are studied.

TO SUMMARIZE

A phonograph in the hands of the resourceful teacher can do much to enrich not only the music program, but also it may be used to add variety and interest to a large number of activities in the classroom. ✪ ✪ ✪

G. TEACHING READING AND THE LANGUAGE ARTS

Our thinking has long been dominated by the mistaken idea that reading, as a basic tool, should constitute the chief avenue of learning. This has resulted in overdependence on the printed and spoken word as the almost exclusive medium of education—even in the teaching of reading. Reading has become the most *overemphasized and undertaught* subject in the curriculum . . .

Teaching Reading the A-V Way

By HUBERT J. DAVIS
Educational Screen, Vol. 31, No. 10, Dec., 1952. Pp. 417-419, 434.

Modern research s h o w s that there are many effective media for learning in addition to the textbook. We have made altogether too little use of the audio-visual media in the teaching of reading as well as in other subjects. However, no one advocates complete substitution of any of these for the printed page . . .

When we consider the broader aspects of reading, the place of audio-visual materials in the reading program becomes more apparent. Reading comprises much more than skills or techniques for assimilation of ideas and words from the printed page. It is not a content subject in the sense that we think of geometry or geography. It does not consist of a few simple skills to be mastered in the early years of elementary school.

Reading is closely related to intelligence and thinking. It involves doing, growing, and making personality adjustments. It is a continuous process extending beyond school into adult life. Therefore, the teaching of reading should become an integral part of the curriculum throughout the elementary and high school. Teaching reading should be the responsibility of all teachers in all grades.

Reading is closely associated with attitudes and emotions. When wrong attitudes are developed, as they often are by faulty approaches to reading, pupils experience unpleasant emotions and often develop blocks and mental hazards which retard the whole learning process.

Gertrude Whipple, in *Reading in the Elementary School*,[1] says, "Audio-visual aids are helpful at all grade levels. Such aids can be used to build an experiential background to stimulate a desire to read, to give concreteness to the reading activities, and to test the child's knowledge of what he has read when the same ideas are pictured."

We cannot force pupils to read, but we can cause them to want to read. Interest and attention provide the basis for all reading. Pupils must have a background of experiences to give real meanings to

new ideas and words. Their immediate world of direct experiences, those that result from seeing and feeling and hearing, is necessary for the development of meanings for words and ideas. They need common group experiences to provide common background for successful reading activities. These common experiences in turn lead to individual experiences which provide for individual growth.

Pupils select or reject what they read in terms of its bearing on their purposes and in relation to their background of experiences. Therefore, the fuller their lives and the more successfully they live at home and at school, the better prepared they are to learn to read.

No one piece of equipment or type of audio-visual material may be singled out as best for teaching reading. Each has its own unique contribution to make.

PROJECTED PICTURES

Projected materials—such as motion pictures, filmstrips, slides, and opaque materials—may be used effectively to bridge gaps in pupils' experience and language comprehension. All pupils come to a reading activity with a vocabulary and an abundance of experiences. However, so little of this is common to the whole group that projected materials are needed to provide a common denominator. When projected materials are used, each child may participate in a common experience and each respond to the same stimuli.

Reading activities must draw upon a fund of vicarious experiences. Projected materials, when properly used, stimulate group participation and enlarge pupil experiences through the sharing of ideas and information . . . Motion pictures are especially effective in providing an overall integrated picture. Few people have the capacity to visualize a whole dramatization or sequence of related scenes when presented through the printed page.

Projected pictures motivate concentration of attention to details. This is necessary for reading readiness. Children love to talk about things they have seen projected and to create their own version of the stories.

With the encouragement and help of educators, producers of films and filmstrips have begun correlating printed materials with projected materials. For example, Encyclopaedia Britannica Films in cooperation with D. C. Heath Company has developed a series of eight text-film combinations intended for use in the first and second grades. These are *Three Little Kittens, Gray Squirrel, Shep the Farm Dog, Farm Animals, The Fireman, The Mailman, The Food Store,*

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1. 48th Yearbook of the National Society for the Study of Education, Part II.

and *A Day at the Fair*. In cooperation with Row, Peterson and Company, EBFilms has also developed a set of film-readers for use at the fourth-grade level. These revolve about children of other lands—*Chinese Children, Italian Children*, etc.[2]

These combinations of film and printed text provide excellent common backgrounds of experience and help to develop meanings and vocabularies. Children like them because they afford an easy way to learn new words. The pictures in the books help them recall new words from the narration. The text-films make great contributions especially to the slow learner and to the bored bright child.

Results with the film-readers have been so encouraging that EBFilms has released six five-minute colored films made especially for first-grade reading and is preparing six more on holiday stories. The new five-minute readers that have been released are *Frank and His Dog, Jean and Her Dolls, A Surprise for Jean, Frank Tends the Garden, Flying a Kite*, and *Sailing a Toy Boat*.

Among correlated filmstrips and printed texts for teaching reading is the "Alice and Jerry" series produced cooperatively by Row, Peterson and Company and the Society for Visual Education. Stillfilm, Inc. (Pasadena, California) is also producing a "Better Reading Series" of filmstrips accompanied by a detailed study guide. The Jam Handy Organization (Detroit, Michigan) offers six color filmstrips on "Animal Stories" made for the primary reading program. And other producers of filmstrips as well as films are developing similar types of materials.

NON-PROJECTED MATERIALS

Non-projected pictorial materials, long used in the reading program, have proved their usefulness also in the readiness program. They provide experiences which stimulate oral language development, evoke discussion, develop a desire to talk, and teach pupils how to use picture clues in reading. Visual discrimination may be developed by having pupils match pictures and picture elements, or by having them discuss pictures to bring out likenesses and differences.

Dramatizations enable pupils to put new words into practice, to bring about integration, to emphasize relationships, and to make reading experiences meaningful. Primary children enjoy producing and showing their own "moving pictures" on homemade scroll projectors. They like to make cardboard or finger puppets and use them in dramatizations. Puppet dramatizations may be used in the upper grades to recreate historical scenes and to interpret life in other lands.

First-hand contacts through fieldtrips or with objects and specimens brought to the classroom provide an effective means of helping children to recognize words, to develop clear understanding of ideas, to develop apperceptive abilities, to build vocabularies, and to grow in visual discrimination.

Bulletin boards, flannelboards, and chalkboards are also essential tools. While they are very effective in reading readiness, they are also extremely useful in the reading program throughout the school. Bulletin boards and other display devices may provide stimulating reading environments. Associations of words and pictures through the use of bulletin or flannelboards involve physical and mental coordinations. Their use often provides pleasing emotional experiences. Pupils may use them in matching objects, picking out and matching words with pictures, playing games, and constructing sentences.

Tape recorders and phonographs are indispensable in teaching reading, language, and literature in all grades. Creative stories and dramatizations may be recorded on tape and used later for vocabulary study. Improvement can be checked and measured through recorded tapes. Special radio programs may be brought to class on tapes. The tape recorder may be used to teach proper pronunciation and enunciation. Professional storytellers may be brought to class on tapes and phonograph records.

Maps, charts, diagrams and original drawings may be used effectively to clarify, extend or give meaning to readings. They may be used to help organize and summarize materials and to make records of experiences. Diagrams, charts and maps find more frequent use in the upper grades to summarize and present organized pupil constructed materials. Their use, however, need not be limited to the upper grades.

The tachistoscope is finding wide use in remedial reading. Research shows that the average person uses only twenty per cent of his ability to see and that pupils develop slouchy habits of seeing. With the tachistoscope, pupils are trained to coordinate their brain with the muscles of their eyes, to see objects in wholes, and to rely upon rapid assimilation of visual images. The tachistoscope has made it possible to teach pupils to read much faster, understand what they read much better, and to develop keener eyesight.

Besides all these specific aids to reading, there is a wealth of general and related materials to use in developing skills and understandings needed in learning to read. Any list of Coronet films contains many examples: *How to Study, How to Read a Book, It's Fun to Read Books, Improve Your Reading, Maps Are Fun*, etc. In fact, practically all well-prepared audio-visual materials on any subject will help in the reading program.

2. See "An Adventure with Film-Readers" by Harriet Gorman, January 1951 *Educational Screen*, page 13.

We obviously have an abundance of materials for making an effective attack on teaching reading. This is a number one instructional problem in our public schools today. Let's hope that the wealth of good teaching aids available will stimulate us to face the challenge frankly and without further delay.

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Reading is challenged by several competing mediums of communication. The comics, the movies, the radio have taken a strong hold on American life. These communication mediums are attractively serving many of the purposes which reading previously served. What is the relationship of reading to these other popular mediums? Can reading survive? Is there any reconciliation?

Can Reading Withstand the Competition?

By
NILA BANTON SMITH
Education, Vol. 68, No. 10, June, 1948. Pp. 616-619.

READING AND THE COMICS

The popularity of the comics with children is attested to in staggering figures. We know that the 230 or so different comic books have a circulation of more than 50,-000,000 a month, and that nine-tenths of their readers are children.

In the realm of opinion one hears and reads numerous expressions of concern in regard to the possible damaging effects of the comics. The results of investigation, however, do not show too much cause for worry.

On the negative side, it is true that several investigations have revealed strong relationships between excessive comic reading and personality maladjustment, although clear-cut evidence is not presented as to which is the causative factor.

On the positive side we have the results of a recent investigation conducted by Heisler in which comparisons were made between comic book and noncomic book readers in grades two through eight.[1] The purpose was to find out if those who read comic books to excess differed from those who did not indulge in this activity. The factors considered were: chronological age, mental age, educational achievement, socio-economic status, social adjustment, and personal adjustment. According to the results of this study, the reading of comic books seemed to have no effects educationally on children.

Investigation has also revealed that extensive comic reading normally is only a temporary measure reaching its height at ten, eleven, and twelve, declining rapidly during the high school years. Data resulting from a recent study of 2,374 high school students show that 17 percent of the children read comics during the first year of high school; 13 percent during second year; 11 percent during third year, and 5 percent during fourth year.[2]

Several psychologists have interpreted this dwindling of children's interests in comics to mean that comics serve the normal child during a certain period in his life for relaxation, for wish fulfillment that seems to strengthen his ego, and for a certain amount of escape; and that as his interests and abilities extend he finds these satisfactions in other ways.

This being the case then, we see the normal child reading comics only as one part of his total reading program. We note also that as the years go by he gradually decreases the amount of comic reading and increases the amount of other types of reading which he does until comic reading trails off to the small place which it usually occupies in the life of normal adults who often turn to the comics for five minutes relaxation before reading the rest of their daily newspaper.

Recent educational literature contains numerous hints to the effect that the comics technique might even have some teaching value which could be utilized in school work. It may be that Al Capp, the creator of Li'l Abner, has a suggestion for us as teachers when he says:

"If comics can sharpen the taste for cereal or spinach, they can certainly be used to stimulate an interest in music, literature, and good living. If Abner listens to a Mozart symphony instead of to cheap, maudlin songs, without intruding into the basic idea of the comic as entertainment, 100,000 kids may want to hear what that symphony sounds like."[3]

READING AND THE MOVIES

The movies of course are not so closely associated with reading as the comics. Summaries of investigations in regard to the movies seem to show that they have about the same effects on children as reading. Investigations report that the movies have great teaching value, that they can be effective in character formation, in changing attitudes, and in acquiring good habits. On the other hand there seems to be a relationship between personality maladjustment and excessive movie attendance. There also seems to be a common denominator in frequent movie attendance, poor home conditions, poor scholastic achievement, and emotional instability. So

1. Heisler, Florence, "A Comparison of Comic Book and Non-Comic Book Readers of the Elementary School," *Journal of Educational Research*, XL, (February, 1947), 458-64.
2. Lorang, Sister Mary Corde. *The Effect of Reading on Moral Conduct and Emotional Experience*, XXXII. Washington, D. C.: The Catholic University of America Press, 1946.
3. Capp, Al. (Quoted by Selma Robinson) "What Do They See in the Comics?" *McCalls Magazine*, LXXV, No. 3, (December, 1947), 24, 98.

movies like reading, it seems, may work for good or may aggravate weaknesses.

The only data bearing on direct value of reading-movie relationships seem to be reports of librarians who say that they have great "runs" on books which are being depicted at current movies. Many people, it seems, wish to read the more complete account which the book has to offer.

READING AND RADIO

The radio is undoubtedly the communication medium, other than reading, to which both children and adults are most frequently exposed. We deplore the blood and thunder serials addressed to children with their slangy talk and highly melodramatic flavor. We worry lest the high-pressure sales talks will give children wrong concepts and thwart their sense of values. On the other hand, we recognize that the radio provides excellent offerings in the way of news, information, literature, and music. So, as in the case of these other communication agencies, it all simmers down to the matter of selection.

One investigation has been reported which has a direct bearing on reading-radio relationships. Lazarsfeld conducted a series of studies for the purpose of ascertaining the relative use of the radio and the printed page.[4] Data in regard to preferences for radio or reading were obtained from people representing different cultural levels. The investigator concludes that the higher the cultural level, the more likely people would be to read rather than to listen. He states further that . . . "the efforts of all the movements which try to improve people's reading habits remain justified and unimpaired by radio's progress."

In children's free reading and in teaching there seems frequently to be a close interplay between reading and radio. Teachers often write of classroom activities in which this interplay is evident. For example, Grace D. Bailey reports a lesson in which the children listened to a radio story of *Mocha, the Djuka.*[5] Discussion followed, the book containing the story was shown to the children as well as several other books containing jungle stories. Miss Bailey reported that there was such a demand for the book *Mocha, the Djurka,* that a waiting list had to be prepared and that other books with similar stories also became popular.

While there seems to have been no studies made in regard to this interplay between radio and reading, empirical examples are very prevalent and indicate healthful possibilities.

CAN READING SURVIVE?

Having reviewed briefly some of the relationships between reading and competing mediums of communication, let us come directly to the question: Is reading in danger of becoming a lost art, or, does reading have some special advantages so compelling as to ensure its perpetuation? We think the latter is the case, and here are some of the advantages:

1. Reading embraces a greater range and variety of material than is available through any other communication agency. The heritage of the ages is stored up in reading as it never can be stored in radio or movies or television.

2. Reading material is more accessible at the time it is needed; in other words in reading we can put our fingers on what we want at the time we want it.

3. For an efficient reader, reading is more economical of time than radio or pictures. The rapid reader, for example, could probably gather as much information by skimming a newspaper for five minutes as he could obtain from a fifteen-minute broadcast slowed down to the rate of the commentator's oral speech and interspersed with commercials, station identification, and other radio conventionalities.

4. The reading process is more adjustable to our individual purposes, interests, and rates of assimilation than any other agency. In reading the individual may proceed at his own speed, he may choose that to which he wishes to give attention and skip that in which he is not interested, and he may turn back and go over certain sections again as many times as he likes.

These are particular advantages which it seems will always be inherent in reading. Because of their individual appeal and usefulness and because of the abundance and prevalence of reading materials, it would appear likely that reading will survive as the most fundamental of the communication agencies.

As an added assurance it is interesting to note that in spite of competing agencies, investigations show that reading is the most widely used of the leisure time activities. At least two investigators, Bell and Dimock, have given us data showing that both boys and girls spend a greater part of their time reading than in any other recreational activity.[6, 7] Hall and Robinson found that "reading is preferred at all ages as a leisure time activity more than any other recreation."[8]

4. Lazarsfeld, Paul F. *Radio and the Printed Page.* New York: Duell, Sloan, and Pearce, 1940.
5. Bailey, Grace D. "A Lesson Using Radio in the Classroom," *The Elementary English Review,* XXIII, No. 7, (November, 1946), 290-94.
6. Bell, Howard M. *Youths Tell Their Story.* Washington: American Council on Education, 1938.
7. Dimock, H. E. *Rediscovering the Adolescent.* New York: The Association Press, 1937.
8. Hall, W. E. and Robinson, F. P. "The Role of Reading as a Life Activity in a Rural Community," *Journal of Applied Psychology,* XXVI, (August, 1942), 530-42.

A RECONCILIATION

Granted that reading is the most fundamental of the communication agencies, this doesn't mean that we should overlook the significance of the others. Research reveals that they, too, are exerting powerful influences in giving information and in shaping attitudes and conduct. It also reveals that these agencies are very effective as instructional mediums in school. We must take their dangers into consideration, of course, but in our enthusiasms for reading let us not slight the contributions which these other agencies have to make. Instead of fearing their competitive influence let's call them into our service in promoting all of the values which we hope for children to realize.

Chubby, an eighth grade boy, was asked to write how some story or book that he had read had changed his thinking. In telling the story of his *reading* experience, Chubby unconsciously trailed off into the realm of radio. This is what he wrote:

"I once thought of being a boxer when I grew up. So I thought I'd learn about boxing. I went to the library to get a book on boxing. Then I took it home and started reading it. I learned quite a few things about boxing and it was very interesting.

"But the next day I was listening over the radio to a story. And next the announcer asked a man to come up and tell about his career. So the man came to the microphone and said his name was Bill Arlington. He said he used to box and when he did box he was called 'One Round-Louie' . . . But one day he found out he wouldn't like to fight anyone who was his friend. So he stopped fighting. So right then I decided I didn't want to be a boxer either because I wouldn't feel too good boxing a pal of mine."

Chubby, it seems, wasn't conscious of the point at which reading left off and radio began. To him the two different mediums of communication made not the slightest difference. Chubby was concerned only with the *total experience*. Perhaps that is how it should be.

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"The sharp increase in time devoted to viewing television programs has led some critics to forecast that we shall soon be unable to read . . . They . . . forecast an illiterate population dependent for its ideas upon films, radio, television, or pictures . . .

"Those who think that reading is the only source of important ideas do not understand the role of reading nor that of audio-visual materials as media of communication."

Edgar Dale

"Can't we read books?" asked the kindergarten class. The children had heard and told stories, they had handled books, and their reading-readiness tests indicated that they were not likely to have difficulty with the printed page, so the teacher wisely said, "Of course you may. What kind of books do you want? What shall we read about?"

What Young Televiewers Are Interested In Reading

By
FLORENCE BRUMBAUGH

In the conversation that followed, not a child mentioned pets, babies, or children — the usual topics for preprimers. Instead, they suggested *rocket ships, Daniel Boone*, the *circus, cowboys*, and *Indians*. When asked why they chose these, many stated that they saw these things on television, and one added, "I'd like to read about how ships run. I saw it on TV."

A few mentioned animals, but limited them definitely — "Not kittens and puppies, but zoo animals like those I see on Sunday from Chicago." Two wanted fairy tales, and said that they like them on the radio and television.

These comments caused the writer to go to two classes of children, slightly older, who were using experience charts and preprimers at the time, to discover whether these were satisfying them . . . The choices of these older five-year-olds were similiar to those of the kindergarten, but they were more critical and definitive.

One said, "Cats and dogs, and how they become grown up. In all of our books they always say kittens and puppies." Another asked, "Could we have foxes now and then?" "Can't we have some extra cowboy books?" said one wistfully. Since three-fourths of the children were wearing Western costumes, this request did not seem to be unreasonable.

A girl spoke about babies, "Not what *they* do, but what we do for them and how," while another in the same vein said, "I'd like a fairy book, not one about families like Betty and Bobby. And birthdays —*we* have them, but all the books are about the birthdays of famous men." A few boys asked for stories about war, and were specific about which branch of the service they preferred.

Obviously the preprimers were not all that were wanted, so the interviewer moved on to the two first grades where children between the ages of six and seven had progressed to more difficult material.

One class had just completed a series of paperbound books that had come from the press a few weeks before. It was anticipated that because the books were so new the children would have enjoyed

them, but one expressed the concensus of opinion thus: "They're all right, but almost the same as all the others we've read — animals, and people that do good."

Amused, because she knew the author, the writer suggested that if they would write the titles they would like, she would ask the author to consider their ideas when he wrote the next series of books. The teacher helped the pupils spell the words when hands were raised, but they were not conditioned by hearing others describe the type of books they preferred. The list which follows is their unbiased opinion, arranged alphabetically, but omitting those directly related to television since these are discussed later.

They asked to have their papers sent with the heading: We Want Books about These People and Things.

Adventure ("getting lost in a forest where those wild animals are, but escaping with your life"); Alexander Graham Bell (The class had been studying communication); Astronomy for Us; Cowboys of *Today;* Detectives and G Men; Discoveries; Double Deckers and Trolley Busses; Elevated and Subway Trains; Engineers (not train kind); Fairy Stories about Betsy (her own name); Funny Animals (pandas, anteaters and unusual animals, not personified); Ghosts; Great People; History of the World; Horses and Stallions; Horses and Tails (tales?); Horses (A new one about King of the Wind); Inventions; Lions and Tigers ("I like *Peter and the Wolf* on records. Has that book been written, or would your friend do it?"); Magic and Tricks; More Donald Ducks; Mysteries; Our School; Red Ridinghood and Her Grandmother (What happened next?); Rickey (He is a lively baby); Science for Me; Telephones (A book with easy words but good); Washington and Lincoln ("They come together, so why not have them in the same book?"); Washington and Washington, D. C. ("Maybe Booker T. Washington, too").

After all the children had made their choices, the interviewer said, "Would you like any books about television or the people who are on the program?"

A near-riot followed, for the children rushed from their seats, pushing each other aside in their eagerness to be the first to give their favorites. They groaned when someone gave the name they had wanted to say, giggled when certain ones were called out, and slapped each other's backs in approval when Cisco Kid, Six Gun Playhouse, Gene Autry, and others of his ilk were mentioned.

Voices rose, and all tried to talk at once, to the teacher's dismay, for she had never seen them in such frenzy. Every program planned for children was mentioned, but news commentators and M.C.'s were given too. An amazing number seemed to be familiar with programs that are telecast after the usual bedtime for first-graders, for they mentioned "Can You Top This," "Sid Caesar and Imogene Coca," and "Counter Spy." Milton Berle and Arthur Godfrey reigned at the top as they do with adults. "Panhandle Pete and Miss Jennifer" were being described with avidity when the dismissal bell was sounded.

The children subsided, but beamed at the person who had brought such a pleasant ending to their day, and as she left, the child nearest the door said, "Come again soon. You understand us. I guess you have a TV set too." (She has.)

On another occasion, the children were invited to draw pictures of their favorite programs. The comments made in explanation of the drawings and the comments from children with opposite viewpoints were very revealing to the teacher.

Summary

The choices of these children from five to seven years of age in one city school show that many of their vicarious experiences are far removed from the content of the basal and supplementary readers provided for them. These children seldom have opportunities to go in the family car to the country or even to the airport, so that the jaunts described in many primers have little appeal for them. The friendly grocer described in some books is a stranger to them, for if they go shopping with their parents they are more likely to pick up frozen food or canned foods, place them in a carrier, and trundle them to a cashier who is intent upon his adding machine.

They must look at the illustrations of children pulling wagons and riding scooters on sidewalks and wonder when the policeman will appear to tell the children to play in the park with such toys, as they are blocking traffic.

Even the community helpers are not too real to them, as many of these perform their services while the children are asleep or at school.

It is true that they learn to read, for they want to do so, and tolerate the text for the sake of the accomplishment, but it would be difficult to prove that it is because of the low vocabulary load. Words used in most beginning readers have been taken from lists compiled before these children were born, and it has not been shown that these words are easier to master because of their frequency. It is possible, instead, that many are nauseated or bored when they find the same dull boys and girls, engaged in innocuous activities in a pre-preprimer, three (or even four) preprimers, two primers, a first reader, and a second reader that have been arranged

logically to provide repetitions of old words with new ones introduced gradually.

Authors might, through similar surveys, discover that other children who may not be on the coaxial cable would prefer variety to continuity. Comic books have reached the smallest villages and have conditioned the children as they did a five-year-old who mentioned the catacombs.

Others may be like the wistful seven-year-old who asked, "Has Disney stopped writing easy books? I've read all but the last three and they are too hard, though the pictures look good and funny." Disney made Mickey Mouse famous, but was wise enough to add new, endearing characters from time to time, including the nameless little blue birds.

"Make us laugh!" cry the children, "and if you can't do that, make your books exciting"; but the adults who are seeking the same escape from tensions provide mere baby food for them and leave it to television to provide the spice.

If a teacher's reading matter is obsolete, she can prepare charts or mimeographed or hectographed material based upon these current interests, and then utilize the English periods for the expression of the children's ideas about the things they like.

Over ten million TV sets are in use at the present time, but relatively few teachers own them. Because they have not enjoyed the programs that they have seen, they have ignored the fact, when planning their classroom activities, that children *do* like them very much. Their dislike of comic magazines did not stem the tide, nor will their dislike for puppet shows or sponsored programs hold back television. An ally can be found by using some phases of the presentations.

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This is Station KMS on the air, bringing you a radio broadcast from Mission School. Take it away, Jack Blanchard!"

The announcer stands by the microphone, script in his hand, awaiting the starting signal from the program director. Engineers in the control booth

The Sixth Grade Goes on the Air

By
WILLIAM H. ALLEN
The Instructor, Vol. 58, No. 4, Feb., 1949. Pp. 27, 73, 84.

turn up the volume of the public-address system. Sound-effects men stand prepared to simulate the galloping of horses, the crackling of fire, or the slamming of a door. Actors and actresses attentively listen for their cues. The sixth-grade class is on the air!

These eleven-year-old children are satisfying one of the basic needs of mankind—the need to communicate their experiences to

This up-to-date unit served to teach the mechanics of producing a radio program, to vitalize English work, and to release children's creative abilities.

others. In a modern elementary-school classroom they are having concrete experience in writing and producing an original radio broadcast. By such means they will achieve the following desirable educational outcomes.

1. Willingness to co-operate in writing and producing radio programs.

2. Progress in overcoming shyness and self-consciousness by speaking over a microphone before an audience.

3. Increased ability to understand the place of communications in modern society.

4. Knowledge of how radio programs are conceived, written, and produced.

5. Ability to express thoughts and ideas in writing.

6. Improvement in spelling, handwriting, sentence structure, reading habits, language usage.

7. A realization of the importance of time and the value of promptness.

8. Skill in handling tools, materials, and arithmetical processes in the construction of the control booth, sound effects, and telegraph and crystal sets.

9. Appreciation for good radio programs and good music.

10. Ability to evaluate commercials on the radio programs.

11. Development of self-control during work periods.

ORGANIZING FOR STUDY

The environment was arranged by the teacher for the purpose of stimulating a desire on the part of the children to study about radio communication. Our exhibits consisted of a partially dismantled radio set, and a public-address system connected with amplifier, microphone, and speaker. Objects to be used for sound effects were: sandpaper, blocks for a steam locomotive, coconut shells cut in half for horses galloping, and a piece of transparent cellulose tissue to crackle to produce the sound of fire. Around the room were posted pictures of radio studios, radio towers, control rooms, radio personalities, television production, and sound effects in use.

The following books were used in connection with our activities:

Collins, Archie Frederick: *Fun with Electricity* (Crowell); Cuthbert, Margaret R.: *Adventures in Radio* (Howell, Soskin); Floherty, John J.: *On the Air; The Story of Radio* (Doubleday); Keliher, Alice Virginia: *Radio Workers* (Harper); Morgan,

Alfred P.: *Things a Boy Can Do with Electricity* (Scribner); Peet, Creighton: *All about Broadcasting* (Knopf); Quinn, Ruth and McNay, Allison: *Classroom Radio Production* (C. J. Ver Halen, Jr., Pub. Co., 6060 Sunset Blvd., Hollywood, Calif.); Reck, Franklin M.: *Radio from Start to Finish* (Crowell); Seymour, Katherine and Martin, John T. W.: *Practical Radio Writing* (Longmans Green); Thomas, Lowell J.: *Magic Dials* (Lee Furman).

APPROACH

The children shared their vacation experiences. The teacher guided the discussion toward the methods by which they obtained news when school was not in session. This discussion led to a comparison of the newspaper and radio as news-gathering agencies.

The children were then given an opportunity to explore the room environment. They experimented with sound effects, talked over the microphone, experimented with the controls of the amplifier, looked at the pictures and books, and tinkered with the dismantled radio set.

After the class had had an opportunity to become familiar with the features of the environment, they gathered again in a group to discuss what was of interest to them. Many questions arose.

1. What does a vacuum tube do?
2. Why won't the radio work?
3. Is this microphone like the one that is used on a regular radio program?
4. Are these actual objects used for making sound effects?
5. Can we make a radio set?
6. Can we put on a radio program?

After discussing the questions, the children decided they wanted to produce a radio broadcast, so the class divided into groups and began preparing several programs. (This was the purpose the teacher had in mind when setting up the stimulating environment. Building upon the interests of the children, the teacher will be able to guide the class toward the desirable educational outcomes which are listed above.)

DEVELOPMENT

When these first programs were broadcast over the public-address system, the class discovered that they had much to learn about radio production. They evaluated their programs and found a need for the following:

1. Written scripts.
2. Longer scripts.
3. Realistic sound effects.
4. Longer rehearsals.
5. More interesting original programs.

6. Practice in using the microphone.
7. Timing of the program without gaps of "dead air."

Thus, the poor success of the first programs led the pupils to a recognition that more preparation was necessary. They divided into the three general groups—those writing the scripts, those making the sound effects, and those exploring the technical aspects of radio. Such division permitted the children to begin work in the area in which they had the greatest interest and where they could achieve the greatest feeling of security and success. The teacher attempted to give all the pupils experience in each of the three areas and in other areas that developed later.

Sample scripts were obtained by the teacher from radio stations, and these were studied. Research was conducted in books, and the correct form for radio scripts was outlined on the blackboard by the class. Plots, suspense, and dialogue were discussed. Different types of programs such as quizzes, varieties, plays, sports, musicals, news, and special events were studied, and program ideas were suggested and written on the blackboard.

The department of sound effects was busy making the more common types of sound effects. As the scriptwriters wrote their scripts, the sound-effects men were told what unusual sound effects were needed. An actual door in a frame was constructed, and a vacuum cleaner became the sound of an airplane motor. These sound effects were all correlated with the scripts as the scripts were finished. The completed scripts were rewritten and polished, rehearsed, and finally broadcast to the class.

In the meantime, those children who were interested in the more technical aspects of radio were experimenting with magnets and electrical apparatus, learning about radio waves, making electromagnets, making telegraph keys, discovering the operation of the various parts of the radio set, and performing other electrical experiments. Encyclopedias were used widely in doing research for this activity, and many books were consulted and studied by the group. The results of this experimentation and research were reported to the class in order to help all the children gain an understanding of the technical aspects of radio communication.

During the rehearsals of the programs the children practiced good acting, clear and correct speaking, and timing before the microphone. After the programs were broadcast, the class gave constructive criticism to the participants, and standards were set up for good acting and speaking.

During the development of the unit many audiovisual materials were used. The film, *On the Air,*

illustrated the production of a radio broadcast. Through the efforts of the technical committee and the films, *Flow of Electricity, Magnets, Primary Cell,* and *Story of FM,* the class gained a more concrete understanding of the more technical aspects of radio, electricity, and magnetism. Slides, stereographs, and filmstrips on other features of radio communication were also used. The blackboard was used very effectively, as were charts of hand signals and radio symbols, maps of proposed television stations and networks, and many models and exhibits.

Many production and technical problems arose which could be answered only by direct observation, so a visit to a local radio station was arranged. After their return from the radio station they evaluated the results of their trip and used the new ideas in their own radio productions.

Research was necessary on the construction of a control booth; many pictures and books were consulted. Plans were drawn to scale, this activity being naturally carried over into the arithmetic period. The teacher used this interest and need for accurate measurement as a means of developing number concepts and skill in arithmetical computation. The viewing of the film, *Measurement,* made even more concrete this learning.

Several of the boys who had been experimenting with electricity made a box for the top of the control booth. Over the open front end of the box was tacked a piece of tagboard out of which were cut the signs, "On the Air" and "Stand By." Behind these letters was pasted red and green paper respectively, and light globes were installed behind the letters. The technicians in the control booths were thus enabled to operate these lights in order to let the actors know when the program was on and off the air.

The class decided that they could better schedule their programs if they were organized into a radio station with a staff similar to commercial ones. They agreed that they needed these departments:
1. Station Manager.
2. Program Department.
3. Music Department.
4. Script-Writing Department.
5. Sound-Effects Department.
6. Engineering Department.
7. Advertising Department.

They discussed and listed the duties and responsibilities of the members of each of the departments in relation to the entire station.

As these activities were carried on, the correlation of so-called skill subjects was not neglected, but rather, permeated the entire unit. Scripts were not produced until they had been neatly and correctly written. All words had to be spelled correctly and the grammatical errors corrected. Examples of good and poor grammatical construction were taken from the scripts and used by the teacher for instruction in English usage. Words incorrectly spelled by individual pupils were listed in their personal spelling dictionaries. Assistance in improvement of spelling was obtained from the film, *Spelling Is Easy.* Oral language expression was continually stressed during the presentation of the programs.

As stated above, arithmetical processes were used continually in the construction of the control booth, telegraph keys, sound effects, and in experiments with electricity and magnetism. Much of the reading was centered around the subject of radio, much supplementary reading was done in books about radio.

CULMINATING ACTIVITY

As a culmination to the study of radio communications, the class gave a radio program to which they invited guests. The best programs of the semester were selected, and the entire class contributed toward making the culmination an example of their best work. Musical numbers were arranged; plays, reports, and the other class activities were presented. The program was organized so that it began and ended at a specific time.

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While there is general agreement that actual *corrective* speech work should be the exclusive concern of the teacher or supervisor of speech, there is also agreement that the work of speech *improvement* lies within the responsibilities of the classroom teacher. In this endeavor, the teacher is in constant need of

Speech Improvement Through Puppetry

By
LAWRENCE T. ROOT

devices to promote more effective teaching and to interest the pupils in making sincere efforts to improve. The puppet show is one such device, and I have found it most satisfactory.

In considering the puppet theater as an aid in speech improvement, we must consider common difficulties that the teacher often encounters. In the case of the shy child, we find that the necessary concern for the activities of his puppet is a good base from which to work. First, the speech and the appearance of the puppet and not the child himself are there for observation and possible criticism. The child may, to a point, lose his own shy identity in favor of the different personality of his character, a point frequently stressed in educational dramatics. In this case, however, he is further helped by the fact that he is shielded from the staring eyes

of the audience by the front screen of the puppet theater.

Calling attention to faulty speech in the case of young children sometimes has an adverse effect; indeed, emphasis on any speech defect at any age is inadvisable. However, the teacher may say, "I can't hear Red Ridinghood very well." The criticism then seems to be leveled at the character and not the child.

While having to speak from behind a curtain might be considered a hindrance to being heard, it also presents an obvious challenge—to be heard in spite of it. In working to improve enunciation and projection the child will realize that he must speak clearly and slowly and pronounce each word carefully and distinctly.

The idea of using puppets in presenting our play "The Gettysburg Address" came from Jane Miller, a pupil who has had experience with puppetry as a hobby. She and four other girls made the puppets at home and costumed them with the help of Jane's mother. The other children had not operated puppets before, but they caught on quickly. We rehearsed about eight times before our first public performance. The children did not object to memorizing the speeches since it was apparent that holding on to scripts and manipulating puppets did not go together.

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H. TEACHING SCIENCE

"I know I let opportunities for teaching science slip by unnoticed because of my lack of background," several elementary school teachers have said to me. Science teaching is not as tough as these teachers believe, because: (1) at the elementary level the science ought to be kept very simple, (2) one of the main purposes is to help children explore and discover for themselves, and so the teacher acts chiefly as a skillful guide, and (3) the subject matter lends itself to experimenting and other firsthand experiences that children can plan for themselves . . .

How Can I Recognize Science Opportunities in My Classroom?

**BY
GLENN O. BLOUGH**
The Instructor, Vol. 62, No. 1, Sept., 1952. P. 62.

Many interesting and important science experiences never come up if we rely on chance. Consequently the most effective science programs include both *planned experiences* that are the result of school-wide programming and *incidental experiences* that arise in the day-to-day living that goes on in the classroom . . . It is very important that the plan be kept flexible.

In order to recognize these opportunities that seem so important, the teacher must know some of the possibilities. How? (1) By becoming familiar with a few of the currently used textbooks in the field. (2) By investigating the local, county, city, or state courses of study in the field of science. (3) By supplementing these two sources with the use of professional books and with science experiences of his own . . . *Remember*: a teacher who plans and learns with children, and realizes that he cannot possibly know the answers to all the questions children ask (and usually wouldn't tell them if he did) is almost sure to be a successful science teacher.

If you use electricity, children will be interested in where the electricity comes from, where it enters the school, how it is measured, how much it costs, how it travels in the school, what different things it does, and how such a powerful force can be used safely. *Remember*: that the school custodian can probably help you; some child's father may be an electrician; a high school science teacher may be handy; textbooks, supplementary books, and magazines contain much helpful material; some especially interested pupils may form an investigating committee.

Now look around outside the schoolhouse to recognize some of the possibilities for science study. If it is autumn and you are in a temperate climate, take a field trip to see how plants are changing, making seeds, and distributing them, storing food, and losing their leaves. What's inside a seed? Where is the food stored? How is it made? How do seeds travel? Look for animals that live in the vicinity—insects, birds, mammals, amphibians, reptiles. How are they changing? Where are the insects? The birds? How are the fur-bearers changing? Where are the animals' homes located? *Remember* that: (1) there are many books about animals and plants, (2) the local museum may have helpful material, (3) a local greenhouse owner may help you, (4) *Nature Magazine* and the *National Geographic Magazine* and many other such publications are helpful, and (5) there may be an amateur botanist or ornithologist in your neighborhood.

Current periodicals and newspapers carry science material of interest—new inventions, pictures of an eclipse, discussions of an insect plague, an account of a forest fire and its results, a map of the path of a hurricane, and pictures of an experimental rocket. *Remember* that: (1) growth in ability to solve a problem is one of the purposes for teaching science; (2) many people in the community know something about astronomy, aviation, conservation, and other fields of science; (3) detailed, involved explanations are not generally needed, but simple, direct an-

swers are found in books, encyclopedias, pictures, diagrams, slidefilms, and motion pictures.

Problems about sound are interesting to most fifth- and sixth-grade groups. What makes sound? How do sounds get from one place to another? What makes sounds different from one another? *Remember* that: (1) many of these questions can be answered when children demonstrate how their own musical instruments make and control sounds, (2) music teachers will answer questions and suggest activities, (3) local builders use many principles of science in soundproofing buildings, and (4) some simple apparatus that shows the effects of sound may be borrowed from the junior and senior high school science teachers.

The social studies and health areas are full of opportunities for making science function. In many instances the areas are mutually helpful. For example, if your group is considering the problem: "How is our community made a healthful one in which to live?" the science opportunities are very real. How is the water made pure? How is the sewage disposed of ? How does the health department use scientific knowledge? *Remember* that: (1) local nurses and doctors have much information to contribute as do other individuals in the community, (2) visits to the places being considered—if carefully planned—will be most helpful, and (3) the various departments in the community and the library may provide helpful printed material.

The most successful science programs use the interests of pupils and rely on the abilities of teachers and administrators to broaden and deepen these interests into channels that provide a rich meaningful science program.

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Saying that slides and films are not supplementary materials is a strong declaration, but I am ready to defend it. They are not *supplementary* materials but *fundamental teaching tools.*

For several years I had held what I believe to be the common point of view about them. To a casual observer I was a frequent user of audio-visual "aids," but actually my use of them was very poor. My classroom procedures were the same as before we had our film library, except that I now used an occasional film to enrich, demonstrate, or corroborate what had already been learned. Frequently the children seemed only mildly interested. I interpreted this to mean that I was using films as much as was reasonable.

Slides and Films Are Not Supplementary Materials

By
CHRISTINE FRANCIS
The Instructor, Vol 62, No. 7, Mar., 1953. P. 2.

Then, one breezy day last March we went to a nearby woods for our first walk of the season. The children came back enthusiastic and excited. They were full of questions and eager for discussion. After school I sat down to do some thinking of my own.

The class had been engaged in a completely audio-visual situation. Actual learning had unquestionably occurred. I decided to change my concept of audio-visual equipment and materials. I would treat them as basic tools of learning.

The next morning interest in the walk was still fresh in the children's minds. They wanted to continue their study of forest plant life. Rather than appoint a committee to locate text and library book references, I decided that films would be our first teaching tools.

From our own school film library, we began with the filmstrips *The Woods in Spring* and *Plants in the Park,* from the Eye Gate "Plants and Garden Series." After a second walk we also used the filmstrip *Life in Ponds, Lakes, and Streams,* from the Jam Handy "Water-Life Series."

I rented the film *The Growth of Flowers* (Coronet Films). The quality of photography in this film is especially good, and the children were amazed to see "in slow motion" the beautiful unfolding process that happens when a flower comes to bloom.

At the children's suggestion, we shared the film with others in an after-school showing.

By now our unit was well under way. We had a museum table filled with specimens from our field trips. One committee was nursing a common wildflower plant in woods dirt before replanting it in the school garden. A group of boys had located some unusual fungus growths in a swamp area on a boy scout hike.

A newspaper account of our unit prompted a neighboring school district to lend us a film, *Fungus Plant,* produced by Encyclopoedia Britannica. While much of it did not apply to our local area, this proved to be an asset for it broadened the children's interest. On the strength of this broadening interest I rented two films of the "Living Forest Series" (Encyclopaedia Britannica Films): *Forest Grows* and *Forest Produces.* (I had hoped to secure also *Forest Conservation,* another of the series, but it was not available then.) These films, in full color, were produced by the Conservation Foundation. They provide excellent material for a unit on forest life. They contain examples of how nature maintains its balance and how the life cycle is sustained by the seasonal changes.

By now you may wonder whether we used books at all. I believe that the class carried on the most generally motivated research of any time during the

year. After seeing the films the children turned normally to research books to have their questions answered in further detail.

I've learned my lesson. From now on, films and filmstrips are part of my fundamental teaching equipment. The children are seeing fresh material, not mere illustrations of something they already know about. And every teacher can have this same satisfying experience in her own class.

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The first-grade children developed a surprising interest in thermometers last winter. It all began very simply but it grew until it occupied some portion of each day for an entire month.

One morning Maryanne came into the room and said, "It's very cold today. The radio weatherman said it's 10." That was as far as she remembered, yet she was pleased because the children had been having number experiences with groups of 5's and 10's and she felt that she was contributing a new idea about "10" to the group. Her statement was right, but she was confused as to the meaning of the weatherman's "10." It was from this small beginning that our science unit progressed.

What Does a Thermometer Do?

By
MARGARET F. DERR

After all the children had assembled for our morning "Talking-Together Time," I asked Maryanne to repeat what she had told me. To most of the children, "10" as an indication of weather or temperature was a new concept. A few children knew that "zero" is very cold. The room thermometer was taken from the wall and its gradations were noted. Since it was small, it was difficult for all the children to see, so a large thermometer was drawn on the blackboard.

Close examination of the small thermometer showed the red line to be at about 70°. A similar line was drawn on the blackboard thermometer. We decided that the room was warm and comfortable but that outside the air was cold and uncomfortable. The new word and concept, *temperature*, was developed.

Semantics played an important part in this science unit. Children enjoy using big, important words, and the word *temperature* not only sounded important, it also looked important when written on the blackboard.

Someone wanted to know what kind of temperature was outdoors at that time. It was suggested that the thermometer be put outside the window and observed by a few children, who were to report to the group. Questions and discussions centered about the following: What was the temperature yesterday? Is it always 10° in the morning? Is the temperature in winter and summer alike?

As we talked over these questions, we decided to make a chart on which we could record the temperature from day to day. It was decided that the children should record on slips of paper the morning temperature as it was registered on an outside thermometer at their homes . . .

Variations in the children's daily reports and radio reports were discussed. The effects of sun and wind and of shelter or exposure of the thermometer were duly noted and added to the wealth of information the children were acquiring. Our own school thermometer was often placed on the outside window sill to note the effect of wind, shade, or sunshine on the little red line which moved so obligingly up or down. Repeated experiments soon developed the understanding that the closer the line came to 0° the colder the temperature, and the closer it crept to 100° the warmer it was. The themometer placed close to the radiator caused the red line to climb quickly toward 100° in a most fascinating way.

Each Monday we reviewed the temperature chart for the week before. We compared temperatures on various days.

We used words such as *higher, lower, colder,* and *warmer.* The children had a clear understanding of word meanings because there had been many opportunities for experiences and observations.

Our temperature chart showed a large thermometer with a string device which could be moved to indicate degrees of temperature. The children enjoyed adjusting it long after the rest of the chart had been completed.

During discussion time the children made some simple science generalizations about temperature and weather and its effect on people, on what we do, and what we wear. The school doll helped the children to remember that proper clothing is necessary for good health. On very cold days the doll was dressed in her snow suit, cap, and scarf. On rainy days she wore a raincoat and cap.

This unit motivated free drawing lessons. Large easel paintings were also made.

The children's interest in temperature and in thermometers branched out into other phases than weather. One of the boys told about his father's car thermometer, and lively discussion followed. It was decided that the fathers were to be asked to show just where and which instrument was the thermometer in the car. The fathers co-operated very well and reports came back for several days concerning various types of car themometers.

To show how quickly water freezes in cold weather, a shallow pan of water was put outside

the school window together with the school thermometer. Both the temperature and the time it took to freeze the water were carefully noted. The effect of the sun on the speed of freezing was an interesting additional experiment.

Carol Sue contributed other ideas about thermometers. She told the group that her mother had a candy thermometer as well as meat, deep-fat, and oven thermometer. She proudly displayed the paper on which her mother had listed all of these.

During this unit many reading charts were developed. Here is one the children enjoyed.

WINTER
Br-r-r, Br-r-r, it is very cold.
The wind blows hard.
We must wear our warm mittens.
W-w-w, W-w-w, goes the wind.

In evaluating a unit of this kind, use only informal means such as the following.

1. Teacher-pupil discussions around such questions as: What are the best things we have learned? What could we have done better?

2. Teacher observation of changes in children's behavior as outcomes of group experiences such as: increased interest, active participation in the unit, increased ability to share and work together.

3. Have the children developed and taken the first steps in "science thinking" as evidenced by helping to develop the temperature chart, by direct observation, by drawing and painting pictures about what they have seen and learned? Do they understand the importance of temperature as it affects our homes, food, and health?

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I. TEACHING THE SOCIAL STUDIES

The need for pictures in the teaching of Geography is inherent in the very nature of the concepts and understandings with which Geography is concerned . . . The physicist, botanist, zoologist, and teacher of elementary school science all can have in their laboratories many, at least, of the machines, plants, animals and other material objects with the analysis of which their sciences are concerned. Unfortunately, the geographer cannot bring indoors for study the real subject of his analysis, for it is the face of the earth as modified by the earth's human inhabitants. Nor can he take his students to see more than a tiny fragment of the real face of the earth. The nearest approach a geographer can make to bringing real landscapes indoors is to use photographs of them. It

Pictures as Laboratory Material In Geography

By
EDITH P. PARKER
Education, Vol. 64, No. 7,
Mar., 1944. Pp. 434-437.

follows that *pictures constitute basic laboratory material in the teaching of Geography.*

The use of that part of the geographer's real subject of analysis which is constituted by the landscape of one's own locality, necessitates field work in which that real landscape is observed directly. Laboratory work with pictures of landscapes should be made as much like field work as it is possible to make it . . . To attempt to teach Geography at any level or stage of general education without such field and laboratory work is precisely like attempting to teach chemistry without providing any opportunity for students to practice chemical procedures in actual laboratory experimentation for themselves . . . No one really has studied Geography at any level until he has learned to make *for himself*, both from real landscapes and pictures of them, findings of the type which geographers make as they analyze the face of the earth with its man-made modifications. Of course, the findings of a fourth-grade child will be exceedingly simple as compared with findings a freshman in college learns to make as a result of effective laboratory experiences. Nevertheless, as in other elementary science work, the fourth-grade child learns to make for himself some types of geographical findings if appropriate laboratory experiences are provided for him. The sense of discovery and the feeling of power he develops as a result of making simple findings from landscapes is as real, as enjoyable, and as stimulating to him as is the sense of discovery and power which comes to adult students from making findings of a higher order of difficulty.

Geographic laboratory work with pictures has as its major purposes:

1. Clear, accurate understanding of the environment in which people live in the region under consideration; of the problems people there meet in coping with or taking advantage of various aspects of that environment; and of means they have devised to use as best they can the resources at hand;

2. Keen realization of ways in which conditions and human affairs in any given part of the earth are interrelated, because of the essential "oneness" of our world, with conditions and human affairs in other regions;

3. The ability to read for one's self from landscapes (whether real, pictured, or symbolized in maps) significant facts upon the knowledge of which such understanding and such realization must be based.

The idea of Geography as a subject necessarily involving laboratory work at every level is new to many educators. Even many teachers of Geography are using pictures profusely without accomplishing through their use anything except the mere visualizing of landscapes in various regions. Such visualiz-

ing is, of course, an essential first step toward the goals of laboratory use of pictures, but it may be likened to the use of a model brought to a physics class to show the appearance of some machine that cannot conveniently be moved into the laboratory. If the physicist does no more than thus define the machine in the form of concrete imagery, and makes no analysis of its workings, he contributes little through his use of the model to a student's knowledge of physics. Similarly, the visualizing of landscapes in any given part of the world is the merest beginning in the use of those landscapes to gain geographical knowledge of critical importance in understanding human problems of living in the environment found in that region.

In many cases, pictures are used profusely without accomplishing even this first essential step of *correct* visualization. In many geography classes the use of pictures resembles to such a degree the use which a travel lecturer commonly makes of them that it seems wise, for purposes of contrast, to consider briefly such a lecturer's procedure and its results. His goal is not the development of geographical understanding in his hearers, but the entertainment of an audience for an hour or so . . . The travel lecturer tends to select, accordingly, landscapes in which such features predominate and embroiders his fabric of descriptive comment with stories of dramatic or amusing incidents. The audience leaves such lectures, as the average tourist leaves a country, with a feeling of satisfaction that he has a volcano, the midnight sun, and the like to think and talk about. His impression of the region as a whole is a composite of the particular specifics presented. At best it is not well enough rounded to be accurate. At worst it is so far from the truth that it breeds wrong attitudes and necessitates much unteaching before any true understanding can be gained.

The pictures used in laboratory work in Geography must be vitally interesting but they must be carefully selected to give a balanced comprehensive, true impression, in which significant details are seen in proper perspective. The mere selection of pictures which will serve this purpose is a complicated, exacting task which tests the teacher's understanding of the region and its people severely. Too many pictures, like too many words, merely confuse. It is as difficult to select a group of pictures which, without being too large, gives a correct general impression as it is to write a lecture which in the fewest possible words develops a major idea clearly with appropriate emphasis on each subordinate idea involved.

Even with such a group of pictures culled, it is not so simple as commonly is supposed to accomplish the first essential step of leading students to translate the picture into accurate imagery of the real landscape photographed in it. When, for example, a city

child in Junior High School saw real cattle for the first time she said "But those can't be cattle. I know from pictures that cattle are larger than sheep, smaller than cows, and spotted." Leading students to visualize real landscapes accurately requires much more effort on the part of a teacher than that of merely showing the pictures and having students call individual features therein by name. Numerous comparisons and contrasts of features seen in pictures with those one has actually observed in real landscapes are essential. Numerous concepts of relative sizes, distances and slopes must be read *into* pictures, with the aid of maps and descriptions, before children can read out of them many of the realities in the actual landscape pictured. Every effort must be made to make the things in the carefully selected photographs seem so real that students in their imagination put themselves in the place pictured and move about, so to speak, in it.

With the completion of this vital visualization step, a teacher has accomplished, as has been noted, only the defining as it were, in terms of concrete imagery, of the real landscape to be studied. Even when one has clear images of landscapes in a given region in mind, he is no farther in his geographical study of that region than is a student of chemistry when he sees the particular liquid he is about to analyze.

Any adequate discussion of later steps in geographical laboratory work with pictures is perforce lengthy. Perhaps in a brief discussion of such work its general nature can be best indicated in terms of results rather than in terms of procedures. Suppose that an adequate group of pictures taken in a given region is on display in a classroom. They are hung at eye level with at least three feet between any two adjacent pictures. They are not captioned, but an outline map attached beneath each one indicates the exact place in the region where the picture was taken. Since they are uncaptioned, what children discover from them must be read from the landscape itself and not from words.

A sixth grade group makes what amounts to a "reconnaissance survey" of the region, each one imagining that he drives from one to another of the places pictured. As a result of their own study of those landscape pictures, the group reports accurately:

1. The major physical characteristics and outstanding features of the region;

2. Evidences, in the form of man-made features in the landscape, that the region is settled densely, sparsely or moderately (as the case may be,) and evidences of differences in density of population in different parts of the region;

3. Evidences, in the form of specific landscape features that activities a, (farming, for example) b,

c, d, etc. seem to be major ways of making a living in the region;

4. Indications, such as specific types of natural vegetation, crops, clothing, houses, etc. seen, of climatic conditions that prevail in the region;

5. Characteristics of the climate that seems thus to be indicated;

6. Evidences, such as roads, vehicles, tools, types of houses, etc., of the level of living that seems to prevail; and

7. Clean cut questions which arise from the facts observed — questions which obviously must be answered by further study of the region in order to gain real insight into the lives and problems of the people in this part of our world.

Clearly children who know how to make these discoveries *for themselves* from photographs of landscapes have had effective training in the use of pictures as basic geographic laboratory material. They have a sense of real discovery and of power to see and think about things *as they are* on our globe. Their observation and thought are, of course, no more mature than they are, but the seeds of more mature later thinking have been planted.

Much is being said and written these days about the need for global understanding. It is impossible to get any adequate understanding of our spherical earth and the lives of its inhabitants without Geography of a type in which laboratory work of high order with carefully selected pictures, is provided. Such understanding can be developed but not until teachers and educators are awake to the need for the right kind of geographical laboratory work with pictures. Do we want to act to give global understanding or are we content merely to talk about the need for it?

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Primary Grade Audio-Visual Materials

By
ELIZABETH BLOSS
and
ALVIN B. ROBERTS

A successful primary teacher probably uses visual aids in the presentation of materials, knowledge, concepts and ideas more frequently than teachers in any other department or field. Blackboards, pictures, charts, objects, models, bulletin boards, picture booklets, and flash cards are used daily. Sand tables, specimens, museum displays, trips, and phonograph records are used often. Why? Because they are teaching methods that make daily instruction more clearly understood and appreciated. Verbal instruction alone is often vague and limited to the instructor's abilities, but visual concepts are clear.

Educational motion-picture films are very effective in presenting teaching material. They give information as natural, life-like experience. What could be more efficient — if used for educational purposes and not mere entertainment?

There must be a definite reason for showing a film — a specific learning the teacher desires to promote. Very little educational value, if any, can be derived from the common practice of presenting a film before an auditorium filled with unprepared children. When there has been no planned preparation or purpose for the showing, the valued film becomes just a "movie" or mere entertainment.

What are some educational purposes for using a motion picture in primary work?

1. To introduce and stimulate interest in the presentation of a new unit of work.

2. To give concrete information on a subject.

3. To develop comprehension, to enrich and enlarge the child's experience, provide a basis for the expression of ideas and thoughts.

4. To review a unit of work.

There are three things the primary teacher must do in the successful use of a film:

1. Preview the film before using in order to make proper preparation for the teaching.

2. Motivate the lesson by preparing the children for what they are going to see — give them specific reasons for seeing the film, through songs, poems, riddles, charts, pictures, models, and real objects.

3. After the film has been shown, use various techniques to correlate it with other activities.

The following plan shows how each of these steps are definitely carried out with the use of a specific film. The teaching content is on the second-grade level, but with slight changes can be used in any one of the primary grades.

THE FARM

Film: *Farm Animals*   Grade: 2nd

I. Unit: New learnings grow out of known experiences. Four-footed farm animals, care of the animals, and how the animals serve the farmer are given special study.

PLANNING PROCEDURE

A. Objectives:

1. General: To stimulate interest in farm life which will give pleasure and will result in further study.

Objectives Established to Gain Desired Learning Results.

2. Specific:

   a. To increase the amount of knowledge by developing the ability to get independent information.

   b. To acquaint the children with farm animals.

c. To help the children to become more familiar with the value of farm animals.

d. To develop an appreciation of the care farm animals require.

e. To increase the speaking vocabulary of each child.

f. To develop comprehension.

AIDS TO ATTAIN OBJECTIVES

B. Audio-visual Aids

1. Flat pictures.
    a. Farm animals.
    b. Barn-yard scenes.
2. Chart.
    a. Questions about the film arranged in chart form.
3. Blackboard.
    a. Riddles.
    b. Word list.
4. Books.
    a. Farm stories.
5. Models
    a. Animals modeled from clay,

Because of content, film was selected and integrated with unit study.

6. Film.
    a. *Farm Animals,* B&W sound, 11 minutes. The care and activities of farm animals are presented in this film. Natural sounds are included. The film treats such subjects as feeding and milking cows, feeding calves, new-born calf, feeding horses, watering horses, cold feeding, feeding pigs, currying and harnessing horses, cows drinking and grazing in pasture, goat and kids feeding, sheep grazing, lambs feeding, and sheep shearing. (*Encyclopaedia Britannica Films, Inc.*)

II. Procedure: Three steps:

Note methods to stimulate interest and prepare children for film.

A. Preparation — Motivate to gain interest.

1. Riddles.

Boys and girls, I know you like riddles;[1] so I have some for you today. As I point to each one, read it with your eyes and see if you know the answer. But let's play "Secret," and don't give the answer until I call your name. (As each answer is given, write the name of the animal on the board.)

QUESTIONS

a. How many names of animals do we have on the board?

b. Where would you go if you wished to visit these animals?

Note how poems can be utilized, put to a special use.

2. Poems.

The children like to hear poems about friends on the farm. I selected mine from "Familiar Friends" by James S. Tippett from *Under the Tent of the Sky.*

> The horses, the pigs,
> And the chickens
> The turkeys, the ducks,
> And the sheep!
> I can see all my friends
> From my window
> As soon as I waken
> From sleep . . .

I am going to read the poem again, and this time I want someone to take this pointer and point to each animal as you hear it in the poem. (Flat pictures of the animals have been placed somewhere in the room.)

3. Chart.

Now we are going to take a trip to a farm by seeing a film. We always see a film to learn something. Look at the chart on the board.

Specific information to be learned from the film.

FARM ANIMALS

COW   HORSE   PIG   GOAT   SHEEP

1. What is the name of the mother animal?
2. What is the name of the baby animal?
3. What does the animal eat?

How many questions do you see on the chart? That is right — three. Let's read them.

Follow plan explained, giving each child a special duty.

4. Committees.

I think it would be fun to work in committees. (To four or five, "You are the cow committee." To four or five more, "You are the horse committee," etc.) Each member of the class is on one of the five committees.

Remember, you want to learn all you can about each animal, but you must be sure and learn about the animal assigned to you. Now for the trip!

B. Presentation of the film.

1. Show the film without comment.

C. Check the showing.

CHECK FOR RESULTS

1. Discuss the charts of questions read before the showing of the film. Call on volunteers from other committees. Check each committee in the same manner.

2. You have learned a lot of new vocabulary words. I'm going to let you tell me about them. As I call your name go to the board, erase a word in the list, pronounce it, tell where you saw it in the film, and use it in a sentence. I'll take the first —

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1. I selected riddles from *A Riddle Book* by Lily Lee Dootson. For example: "I eat hay. I live in a barn. I pull a wagon. What am I?"

milking machine. I saw the farmer use a milking machine on the cows.

Word list: (Children make sentences.)

1. Milking machine. 2. Cow. 3. Calf. 4. Mare. 5. Sow. 6. Colt. 7. Kids. 8. Cud. 9. Lamb. 10. Hayloft.

III. Second screening — procedure follows the same three steps.

A. Preparation for the showing.

1. Pictures.

Today I have some pictures on our bulletin board. Of what do the pictures make you think?

To tie up with previous screening.

Look at the pictures and see how many things you can find that you saw in the film on farm animals the other day. (Let the children freely discuss the pictures.)

2. Chart.

I have another chart on the board about the same farm animals.

Specific but different need for second screening.

FARM ANIMALS

COW   HORSE   PIG   GOAT   SHEEP

1. What care does the farmer give the animals?
2. Of what use is the animal to the farmer?

How many questions do we have this time? Let's read them. Now we're going to see the film again. This time we will work in one big group and see who can find out the most about each animal.

B. Re-showing of film — *Farm Animals.*

1. Present without comment.

Check for results.

C. Check the showing.

1. Check the chart of questions above.

New vocabulary list with different application.

1. Harness. 2. Windmills. 3. Skim-milk. 4. Pasture. 5. Scales. 6. Bridle. 7. Curry. 8. Hoof. 9. Shears. 10. Bit

2. Word list.

We have some more words to add to our vocabulary books. This time you may use the word list to fill in the missing words in the sentences on the board.

Sentences:

1. The farmer used.......................to cut the wool from the sheep.
2. The cows were eating grass in the..................
3. A.......................is part of a horse's bridle.
4. ....are used to pump water. Etc.

A few ideas to show how all classroom activities can be correlated.

IV. Use various techniques to correlate with other classroom activities.

A. Language.

1. Guessing game — Have children make up riddles about farm animals or other things they saw in the film and let others guess.

2. Make a short poem about the farm or farm animals.

3. Have a conversational period and let each discuss what they liked best in the film.

4. Start a vocabulary book, using the word list and writing a sentence with each word.

B. Writing.

1. Write a sentence telling what you would like to do if you could visit a farm. Expect a simple one like — I want to milk a cow. (To be a true writing lesson the teacher must supervise this period.)

C. Spelling.

1. Teach the words in both *word lists.* (They should be divided into several lessons.)

D. Reading.

1. Place books about the farm on the library table. Let the children be free to read them.

E. Numbers.

1. Prepare simple addition and subtraction about farm animals.

F. Art.

1. Model farm animals out of clay or with wire pipe cleaners.

2. Draw crayon pictures or paint pictures of the farm.

3. Make a frieze of farm life.

4. Plan and construct a farm on the school-room floor.

G. Science and Social Studies.

1. Plan and make a visit to a nearby farm.

Follow the same procedure:

1. Preparation.
2. Presentation of film.
3. Check for results.
4. Correlate.

V. Unit continued: Study the feathered friends of the farm by using the film: *Poultry on the Farm.*[2]

VI. Carry over to the next unit of study.

Suggestions for unit of study.

A. Our Community.

1. The dairy. 2. The store. 3. The post office. 4. Fire station, etc.

One last idea — this is just one plan of attack! It involves: 1. Preparation. 2. Presentation of the film. 3. Checking for results: namely, the attainment *of the six specific objectives as stated in the beginning of the unit.*

Each teacher has her individual way and method of planning and giving instruction. She knows her pupils and how she may best stimulate, enrich and give them new learnings. No lesson plan can be written that can be used word for word by all teachers.

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2. Poultry on the Farm, 11 min., sound, Encyclopaedia Britannica Films, Inc., Wilmette, Illinois.

IV Secondary Schools

A. GENERAL DISCUSSIONS

All teachers, irrespective of the level on which they teach, make decisions and act in three important areas. First, they must have clearly in mind the kinds of pupil-behavior their instruction should bring about. The effective teacher of secondary school social studies, for example, works consciously toward certain definite ends. His teaching is controlled by some concept of the kind of social maturity he wants his pupils to achieve. The second area in which decisions are made by every teacher involves choosing and devising learning experiences that will bring about this maturity. Boys and girls learn by being active. Some activities are very educative. Others teach little that is lasting or pertinent. The teacher's third responsibility is to develop techniques for finding out whether or not the desired learnings have occurred. This is the evaluation or testing aspect of the teaching-learning process.

The Importance of Perceptual Learning

By
STEPHEN M. COREY
Educational Screen, Vol. 24, No. 9, Nov., 1945, Pp. 394-397, 404.

In this article I shall concentrate on the second of these three problems. Assuming that the teacher knows the kinds of behavior he wants to develop, which psychological considerations should govern his selection of learning activities? Pupils may be asked to read textbooks; to talk to one another; to participate in debates; to work in the laboratory handling apparatus and equipment; to make a field trip; to produce a play; to write an essay; to visit with an expert; to answer questions the teacher asks; to study a motion picture, or a map, or a graph, or a globe. Teachers from time to time may request boys and girls to do all of these things. The reason for the request or the assignment of a certain activity is that the teacher believes it is the kind of learning experience that will bring about the achievement of desirable objectives.

REALISM TO SYMBOLISM

From the point of view of a psychologist interested in concept formation, these varied activities children engage in in school can be described in terms of the degree to which symbolism is involved. It will help clarify what I mean if the reader will imagine a long scale or continuum on which we can place all the different kinds of instructional materials that teachers use to direct the learning experience of school children. At the extreme left of this scale, will be placed those materials or those learning activities that involve a great deal of seeing, feeling, hearing, and active participation on the part of the pupils. Learning about a grocery store by actually working in one with a skilled teacher present to help identify the important lessons, is the kind of learning situation that would be placed near the left-hand extreme of the scale.

Then as we move gradually to the right the instructional materials imply learning experiences involving more and more abstraction and symbolism. They increasingly involve vicarious learning — experiences not with the "real thing" but with some kind of substitute for it, — a picture, a model, a diagram, a map, or, and here we school teachers bear down hard, printed or spoken words. Learning situations or instructional materials that are exclusively verbal belong at the extreme right-hand end of this scale. Here everything that the boys and girls meet is symbolic and abstract.

To illustrate further the nature of these different kinds of learning experiences, consider the teacher of social studies in an urban school who wants his eleventh-grade boys and girls to learn as much as they can, during a limited period, about rural life. He wants them to learn how farmers live. What is the nature of the work farmers do? What do the children do on the farm? How many farmer's children eventually move to the city? What is their school like? What kind of jobs do they look forward to? How is the farm community organized? What do the adults do for recreation? How active are they in politics? How do they feel about city people? How are the crops harvested? What becomes of these crops?

NATURE OF LEARNING EXPERIENCES

This high-school teacher, would think of many different kinds of experiences that would help students learn these important lessons about rural life.

The boys and girls, for instance, might spend several weeks actually living and working in a rural area,— doing the work the farm people do, spending time in farm homes, serving as members of rural community groups. They would leave their own high school and homes, and, for a time, actually do the things that rural people do, with the teacher doing his best to see to it that this first-hand participation in rural-life activity was maximally educative.

Or, if an arrangement of this sort could not be made, these young people might spend some time visiting rural communities. They would observe what went on. They would ask questions. They would see and hear farm animals, and farm activities and farm equipment and farm people. Eventually they would formulate some generalizations about rural life. They would organize their knowledge and reach certain "value judgments." This learning would be based upon watching rather than participating. Their teacher would again, of course, help in this whole process and do his best to see to it that important lessons were learned.

Or these young people going to high school in a large city might try to learn about the ways of farmers by looking at many good motion and still pictures that deal in an authentic way with farm activities and operations. There could be well-made sound pictures on farm animals, plowing and harvesting, the farm home, the work of the county agent, rural community activities, farm equipment, canning, butchering, the farm dairy, and so on. There might also be made available a number of objects and models and exhibits including maps and charts and tables and samples of produce that illustrate the activities that go on in a rural community. Instructional materials of this sort would make it possible for the boys and girls to stay in the classroom almost all of the time that they are learning about farm life.

Or finally, and this kind of learning experience would be far over at the right-hand end of the scale I have described, the pupils might spend all of their time in the classroom talking and listening and reading about rural life. They would use texts and encyclopaedias and bulletins and mimeographed materials. Farmers and rural social workers, implement dealers, and other people who know a great deal about farm life might come to the classroom to give talks and to answer questions. The boys and girls themselves would organize panel discussions, and have debates, and write reports. Again their teacher would help them in all of this activity.

Now admittedly an excellent instructor would try to provide his pupils with learning experiences which fall at different points on this scale so far as their degree of symbolism or abstractness is concerned. Most of us school teachers tend, however,— it is almost an occupational disease, — to stay too far over toward the right. We know how to use verbal materials best. Books and words are convenient and accessible. We feel at home with them. We like to read and talk and to have our pupils read and talk. Schools make everyone think of textbooks and lessons to be recited.

Words Save Time

No serious student of the learning process fails to see the great merit in verbal instruction, on one condition. Words, assuming that this important condition obtains, save a tremendous amount of time. To be able to read and to understand the statement, "People in farm communities know one another more intimately than people in urban communities," is a much more economical way to acquire that generalization than to spend days living in rural and urban communities.

The condition that makes the extensive use of words in teaching and learning an economy is an obvious one but it is constantly overlooked. The condition is that the words must communicate adequate meanings. Merely because a pupil is able to repeat or paraphrase words he has read from a book or has heard his teacher speak is no assurance whatsoever or meaningful learning. This is apparent to everyone who has listened to children "recite" or who has read large numbers of their test papers.

Words can be repeated with a glibness that is completely deceiving to an amateur observer. A pupil who, to the direction, "State an important distinction between rural and urban life," answers, "People in farm communities know one another more intimately than people in urban communities," may have learned nothing more than an interesting series of lip, tongue or throat movements, or, even worse, the meanings he associates with these words may be entirely erroneous.

A number of scientific studies have been made of the meaninglessness of sheer verbal learning even when terms can be defined glibly and instantly. One of the more recent ones has been reported by Horn of the University of Iowa in the Forty-first Yearbook of the National Society for the Study of Education (404 f.) . Horn reported the interpretation that fourteen seventh-grade pupils gave for this sentence which one of them had used and which had appeared in a textbook, "The Missouri Compromise of 1820 established the parallel of thirty-six thirty between slave and free territory." The question that was asked these boys and girls was, "What is meant by the parallel of thirty-six thirty?" Here are some of the answers: (1) "That the slave and free states

were evenly populated and were of the same strength." (2) "Boundary line between slave and free states was thirty-six degrees north latitude and thirty degrees north latitude." (3) "The two lines of the year 36." (4) "The line drawn between the slave and free states." (5) "Well, they kept it even — the same amount of territory for slave and free." (6) "The year 336." (9) "The slave and free territories were equal." (10) "It was on the 36th year and on the 30th day." (11) "I think the parallel of thirty-six thirty means half and half." (12) "That's why they, — Mr. Lincoln and Congress, — made the parallel line on the map. — All of them sat around a big table and Mr. Lincoln drew the line and read the Emancipation Proclamation." (13) "About this many slaves in all north, south, west and east." (14) "I haven't the slightest idea."

Meaning Is Important

A great contribution to adequate learning might have been made in this instance by the use of instructional materials that lie farther to the left on the scale which I have described. Had these seventh-grade boys and girls, fumbling around with concepts of the globe and the various lines that have conveniently come to represent longitude and latitude, been taught the meaning of these lines through a rich variety of visual aids — maps, globes, motion and still pictures — the words would have derived their meaning from realistic perceptual experience and would have had less ridiculous implications. This, I know you will recognize, is no argument against using words in instruction but rather an argument that words instruct only if and when they derive their meaning ultimately from common experiences that invlove seeing, hearing, feeling, hefting, smelling, and other varieties of "first-hand" perception. In the degree that these common perceptual experiences are lacking or inadequate, words are little more than noises or interesting black marks on a piece of paper.

The fact that all words do derive their meaning ultimately from perceptual experience is a fundamental generalization now taken for granted by students of the psychology of learning. It makes no difference how abstract a word is, its value as a tool, as a means of interpreting or controlling experience, depends upon the percepts from which it is derived. Common observation proves this to be the case when your children are heard defining terms. To the child the pencil is to write with, the chair to sit on, the table to eat from, a window to look through, a bed to sleep on.

In such cases it is clear that words mean whatever a child's perceptional experience with the objects or operations symbolized by the words has

taught him. To one child a dog is a "a bad animal that bites," while to another the word dog means, "I pet him." The meaning in each case depends primarily upon the child's perceptual experience with the animal someone else called a dog. In the degree that this experience has been varied and extensive the meaning which is attached to a word is realistic and useful. In the degree the opposite is true, words are relatively meaningless and useless. For the child who has seen a cow, milked one, fed one, tried to drive one out of a corn field, been chased by one, seen a cow's calf born and raised, helped with dehorning, and has been in the stall when the veterinarian tried to relieve a suffering cow, — for such a child the word "cow" has rich meaning. It "stands for" a great deal. Contrast this with the youngster from Brooklyn who thought a cow was "a little blue animal" because the only one he had seen was on a Pet Milk can. He, incidentally, was attempting the impossible task of peopling certain of the fairy tales he read with men and women who were small enough to milk a cow this size.

In exactly the same way, but involving a somewhat more complex concept the word "city slums" may have rich meaning for the young man or woman who has lived there, observed carefully what went on, talked with slum dwellers, smelled the smells and been a party to the unbelievable amount of human misery that exists in blighted city areas. The same word, however, would have relatively little meaning for the upper-class child who had never gone hungry, or been filthy, and whose parents had consistently been kind and understanding, and whose home and neighborhood life had been excellent, both economically and psychologically.

Meaning Depends on Real Perceptions

Not only is it true that all of the verbal symbols we use to communicate ideas are rooted in common first-hand perceptual experiences, but it is also true that to the extent a specific concept must be taught by reference to perceptual experiences remotely related to the concept the meaning will be erroneous or unrealistic. This was illustrated in my presence some time ago when I observed one third-grade child trying to teach another third-grade child what a zebra was. The young teacher first said to his pupil, "Have you seen a donkey?" This question was psychologically interesting. It meant that the young teacher realized that he had to start with some experience that both he and his pupil had had in common. Now the concept of a zebra that would have been taught by using a donkey and putting stripes on him (both children having "experienced" stripes) would have been a fairly adequate concept. The teacher would have been forced to go just one

short step away from the real object in order to employ concrete perceptual experience. But in this case the youngster actually had not seen a donkey. The next question was, "Have you seen a horse?" Now to describe a zebra in terms of a horse would result in a less adequate understanding of a zebra. It so happened that the youngster had seen a horse and so his teacher went on to describe a zebra in terms of a horse by adding the stripes and saying a zebra was somewhat smaller, built a little bit differently, and so on.

Personally, I wished that the child had not seen a horse. I would like to have observed what the young teacher did next. Let's say that he went to a cow, and then to a dog. If none of these common starting points proved useful it would have been interesting to have heard the third-grader attempt to describe a zebra in abstract terms, as an animal with a torso something like a barrel (which both children had seen) "and from each of the corners, — no a barrel cannot have corners, — anyway there would be two legs in front and two in back which just reached to the ground." The sort of idea the third-grade pupil would have learned about the zebra from this type of instruction would not have enabled him to recognize the animal were he later to have seen it in the flesh.

Words Piled on Words

This futility of trying to teach the concept of a zebra in terms of abstraction, when the learner obviously had had an inadequate perceptual background, needs no elaboration. The paradox is that we constantly try to teach about other concepts, or objects, or operations infinitely more complex than zebras without giving more than superficial consideration to the necessity of appropriate percepts. Social science teachers try to have children understand the meaning of words like "referendum," "international relations," "war," "peace," "primitive culture," "urban civilization," "the law of diminishing returns," "citizenship," "reciprocal trade," and "patriotism" by piling words upon words.

It should be repeated at this point that words are marvelous things, but only marvelous if they convey adequate meanings. And they convey adequate meanings only if they are rooted rather immediately in a rich matrix of perceptual experience. This is no argument that everything has to be learned first-hand, but rather that there must be a constant effort to see to it that pupils have had perceptual experiences adequate to warrant the use of particular words. I listened to a bright thirteen-year-old youngster from an upper middle-class home the other day say very glibly, "There are certain residential areas in Chicago where the percentage of common-law marriages runs as high as 80." This youngster had an IQ of about 175 and he not only expressed this view but many others like it. I was tempted for the moment to believe he knew something. As I asked additional questions, however, it was clear that the chief thing he had learned was how to string words together in a sentence such as he had read in a book. He had no understanding of what went on in those residential areas where the common-law marriages exceed 80 percent. He know nothing about the squaler, the unhappiness, and the consequences of lower-class morality. In other words, his idea of "80 per cent common-law marriages" was an exceedingly limited one.

Generalization Is Important

Merely having first-hand experience does not, of course, necessarily mean that learning is appreciable. Percepts are a necessary but not a sufficient condition for effective learning. Learning takes place most rapidly when the learner is alert for generalization based upon his experiences. Everyone has met traveling salesmen who have visited each state and major city in America, have seen everything and learned nothing, — at least nothing that will bear repeating. They would find it impossible to answer one-half dozen of the simplest questions regarding American culture. Most of us recently have talked to returning servicemen. Some of them have learned a great deal from their first-hand experiences while others have learned little.

It is true, too, that bright people learn more from limited perceptual experience than do dull people. Boys and girls who have fine minds need fewer perceptual experiences as a basis for their generalization. Every study that has been made of the utilization of audio-visual instructional materials implies, if it does not indicate clearly, that such materials are relatively more educative for pupils of low IQs.

Providing first-hand perceptual experiences for school pupils is apt to be an expensive process. While it might be true that the best way to learn about life in France would be to spend six months living there in association with an excellent teacher, this, because of expense and the time factor, is completely out of the question for most Americans. Such a conclusion, however, does not preclude the utilization of instructional materials that involve relatively a great deal of perceptual experience. We can compromise with going to France by resorting to dramatics, models, graphs, charts, flat pictures, motion pictures, and recordings. The difficulty with most of us is that we compromise completely and resort exclusively to the use of words, when we want to communicate ideas about French culture.

In conclusion, — the practical question teachers face should be noted. The question is, "How can we know when meanings can be adequately communicated by the use of words? What can we look for in order to know when additional first-hand perceptual experiences are needed?" The answers to these questions certainly are not simple. My observations lead me to conclude, however, that there is relatively little practical danger of going too far in the direction of saturating our instructional materials with large quantities of audio-visual aids. It is conceivable that the time may come in the future when inadequate utilization of verbal materials interferes with effective instruction, but our immediate problem is of quite a different nature.

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Communication is the business of making and interpreting signs and symbols. Some communication seems to proceed without such intermediate signs. You can usually understand the meaning of of a push. But it might be in fun, so you have to read the face of the pusher to make sure.

Learning by Listening

By EDGAR DALE
The News Letter, Vol. 16, No. 2, Nov., 1950. Pp. 1-4.

We make signs of symbols by speaking or writing words, by making drawings, paintings or photographs, or by using musical notation. These signs are interpreted by "reading" the words or the drawings or whatever visual media are employed. The written signs are interpreted by reading; the spoken words are interpreted by listening. One must hear them, listen carefully, then figure out what they mean.

People vary in their ability to interpret written or pictured symbols. A few are like the mountaineer who didn't know whether to read the black or the white part of the paper. And a few people master the art of reading complicated books like James Joyce's *Ulysses* or Charles Morris' *Signs, Language and Behavior.*

INDIVIDUAL DIFFERENCES

People also vary in their ability to interpret spoken sounds. Illiterate persons may be very skillful in interpreting the sounds of the woods or the plains, as our American Indians must have been. Listeners may be very sensitive to the mood of a speaker, even though they may not understand what he is saying. Anger and friendliness are easily interpreted. But when words are spoken to express ideas through speech, the same problems of understanding and interpretation arise as in interpreting the "written" sounds.

A good listener is usually a good reader, and vice versa. Paul McKee points out in *The Teaching of Reading in the Elementary School* that "In general, beyond the third grade level, the pupil who does not understand a statement which he attempts to read does not understand that statement when it is read or spoken to him. Furthermore, available data show that most pupils at intermediate and upper grade levels have as much difficulty in understanding the instructional talking of the teacher as they have in understanding what their textbooks say." Listening involves more than interpreting verbal sounds. An article by Aaron Copland, the noted composer, is titled, "Tip to Moviegoers: Take Off Those Ear-Muffs." Copland wants movie scores by serious composers judged by the same standards as are applied to concert music.

We also need "educated" listening to lectures, sermons, discussions, conversation. We accept the idea of improvement of reading, but there is also a parallel need for the improvement of listening. The improving of reading aids listening, and vice versa, since both are skills using symbols — one written, the other spoken.

Reading and listening have advantages and disadvantages as media of communication. In listening to a person who is physically or visually present, as in television, we get a total impression — his voice, mannerisms, apparent sincerity. This halo of reality may be lost in reading.

Listening, however, may sometimes be a very inadequate way of getting meaning. If you miss a point in your reading or wish to linger over it, you can do so. You set your own pace. But you can't re-listen unless you have a recording or unless you can re-show the film and listen again to the sound track. Even if you have the recording, it may be troublesome to re-play it for this purpose. And in radio broadcasts you may miss things that you wouldn't miss on face-to-face contact, either personally or on television. All of us are aided by reading the lips of a person who is speaking.

THE FIRST PROBLEM

There are several communication problems in listening, as in reading. All of them are of concern to the teacher or parent. The first problem in listening, especially in the mass media, is to get people to listen. We want them to go to the excellent play or concert or lecture series instead of staying home and looking at the wrestling matches on television. We want them to tune in excellent programs over the radio rather than trash. We want them to get into the habit of listening to the important rather than to the unimportant, the trivial.

Why don't they listen? It is no explanation to say that they don't listen because they don't feel the taste for it. Why don't they have the taste for it? Here, of course, we have the cultural and social patterns of the day which are influencing choices. But having said this, we must also say that parents and teachers are not making a consistent and well-organized effort to influence these tastes.

Availability is a key factor in taste. The British Broadcasting Company, in addition to its two regular programs, has a third program designed for the critical listener, an experimental creative program. The American public, however, is being shortchanged as far as good radio programs are concerned. There are a few notable exceptions. We have Station WNCY in New York City — a station publicly owned and operated. There are university stations here and there throughout the country, such as WOSU at The Ohio State University, but nearly all of them operate on inadequate budgets and with insufficient staff.

What is needed is a concerted effort on the part of educational and cultural stations to get better financial support. These should also be more co-operative effort in development of programs. The Ford Foundation could do nothing more effective in raising the level of radio and television in this country than to support some cooperative effort in this field.

THE SECOND PROBLEM

There is a second problem in listening. Let's suppose people are tuned in to the radio program, or are physically present at the lecture or discussion. What then? They must listen attentively to hear what is said, just as they must read to discover what the writer said. They must hear the lines. But they must also hear *between* the lines, catch the mood and intent of the speaker. They must judge his objectivity, his flexibility, his adaptability. Is he trying to *think* things over, or is he trying to *put* things over?

The listener must also go *beyond* the words that he hears. He must ask, "What does this mean to me as a person, or as a citizen, or as a parent? What are the implications for action?" If resource persons are present, he must get from them suggestions and ideas on which the group or organization can proceed.

This means critical, discriminating listening. It means a willingness to examine points of view in our own thinking which we may have previously been unwilling to scrutinize. It is no secret that most of us listen chiefly to points of view with which we agree. We may be willing to rearrange our prejudices, but not to examine them.

How much of this critical listening do we teach in schools and colleges? It must be pretty limited, since Stanley Dimond, now Professor of Education at the University of Michigan, has reported to me in a letter "I can get little evidence in our Detroit schools or in most of the other schools of the nation that thinking or problem solving is taught. There is a lot of lip service but I venture to say that practically nothing is being done. Still the evidence is clear that children learn more information if they are engaged in problem-solving activities."

In one sense, of course, our schools have been places which encouraged passive listening rather than critical listening. In Dewey's *School and Society* he points out the following:

"Some few years ago I was looking about the school supply stores in the city, trying to find desks and chairs which seemed thoroughly suitable from all points of view — artistic, hygienic, and educational — to the needs of children. We had a great deal of difficulty in finding what we needed, and finally one dealer, more intelligent than the rest, made this remark: 'I am afraid we have not what you want. You want something at which the children may work; these are all for listening.'

"That tells the story of traditional education. It is all made "for listening"—because simply studying lessons out of a book is only another kind of listening; it marks the dependency of one mind upon another. The attitude of listening means, comparatively speaking, passivity, absorption; that there are certain ready-made materials which are there, which have been prepared by the school superintendent, the board, the teacher, and of which the child is to take in as much as possible in the least possible time."[1]

IMPROVING COMMUNICATION

If there is to be good listening, there must be good talking. The good talking may be "teaching talking"—artful explanation by teacher or pupil—or it can be what we call good conversation. No matter which kind we are talking about, there must be a mood of mutuality. We must listen to each other not merely for the purpose of getting a chance to talk—you listen to me and I'll listen to you—but because only through discussion can we really solve our problems.

There is a brilliant article by Holly Whyte in the September *Fortune Magazine* titled, "Are you Listening?" It is a devastating analysis of the lack of effectiveness of the communications of certain business groups. I would sum up this failure as due to a desire to interest people who do not interest us. J. B. Priestly says in his book, *Talking:* "It is the most

1. Dewey, John. *The School and Society.* Chicago: University of Chicago Press, 1900.
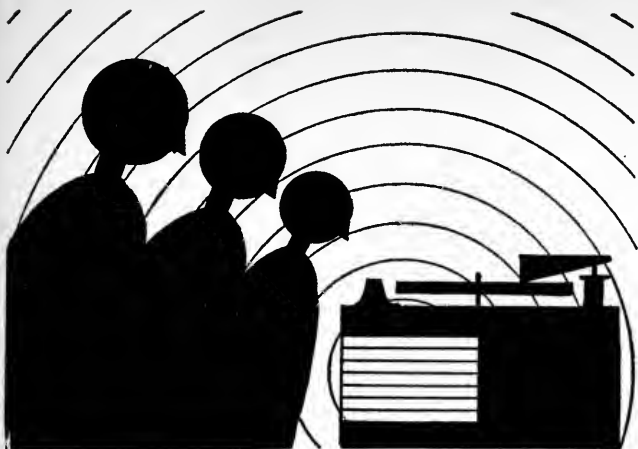
shadowy play of vanity to arouse the interest of people in whom we are not prepared to interest ourselves."

How can you get good listening in the schools? You won't get it by commanding the children or young people to "pay attention." The injunction could just as validly be given by the children to the teacher. The children are not paying attention to the teacher because the teacher is not paying attention to them. Good listening comes from being a good listener. There are vocal and nonvocal signs that show interest, boredom, a lack of concern. If students aren't listening, they may not be learning. There is a story of the psychiatrist who was asked by a layman, "How can you sit there and listen day after day to what your patients are saying?" "Who listens?" remarked the doctor.

To improve communication we must see language in all its richness. Language is a distillate of experience. Language is spoken and listened to. Language is written or pictured, and then read. We put meaning into what we hear as well as get meaning out of it. We put meaning into printed symbols in order to get meaning out of them. Reading and writing are two parts of a unitary process. Speaking and listening may be similarly described. And all four abilities are a unitary part of the language process.

Good reading, therefore, makes good conversation. Good conversation makes good listening. And good listening may stimulate a desire for good reading. No matter where you start in developing good communication, you will need to make use of these four aspects—reading, writing, speaking, listening. The listening must be whole-hearted as well as whole-minded. The listener must do more than re-produce what has been heard. He has an obligation to re-create it, to sense its meaning for himself, to make it an integral part of his thinking and action, not an unabsorbed addendum. ✪ ✪ ✪

B. USE OF AUDIO-VISUAL MATERIALS IN JUNIOR-SENIOR HIGH SCHOOLS

Analysis of motion pictures as used in John Jay High School (Cleveland, Ohio) shows that this educational tool performs a triple role: (1) the recreational-educational programs, (2) the public relations and vocational guidance programs and, (3) the classroom visual and auditory programs. For convenience, each of these will be elaborated upon separately.

THE RECREATIONAL-EDUCATIONAL PROGRAMS

The recreational-educational programs, the "assembly program" and the "noon movie program," take place in the school auditorium. The assembly programs are periodic in nature and are furnished free to the entire student body. Their purpose may be cultural, informative or educational. A typical example is a film accompanied by a lecturer. He may be a naturalist, traveler or an outstanding authority in a field of general interest to the entire school. Or the assembly program may consist of a sound film. The subject may be introduced by the principal or a faculty member and the film may be of the morale-building or documentary type. . .

Motion Pictures in a Modern High School

By
LIBRADOR K. MEOLA

The second type of auditorium program is the noon movie, the daily showing of selected motion pictures in the school auditorium during the luncheon periods for a small admission fee, attendance upon which is entirely voluntary. It consists of a 20-minute showing of a feature picture or program of shorts. Of a feature picture two reels are shown daily. When the feature is completed, the balance of the week is devoted to pictures like the March of Time, or travelogs.

Obviously, the selection of the noon movie must meet certain definite criteria in order to justify its use. If properly selected, the film (1) should help solve some life situation, thereby increasing the educational horizon of its audience, (2) must have sufficient appeal to make students want to go to see it of their own free will, (3) should deal with desirable and undesirable life situations, the solution of which will leave its audience with desirable impressions, (4) should have technique and content both authentic and reliable, (5) must induce attitudes that are both appreciative and discriminatory, (6) should create critical attitudes and good judgments, (7) must be wholesome and provide an enjoyable and truthful presentation of literary, historical, political and economic experience, (8) should inspire youth to read the books upon which the film has been based, (9)

and finally the noon day film should be a laboratory for motion picture appreciation courses, where criteria are set up for shopping intelligently for one's recreational needs outside the school.

So much for the selection of noon movies at John Hay. Apparent advantages are derived by the school. Such a program (1) does away with the costly and difficult job of supervising large study hall groups, approximately 800 students each, (2) is a sort of school safety valve, in that it provides a program where students can give vent to pent up energies, thereby minimizing discipline problems, (3) simplifies the school's master program, in that several teachers who would have been assigned to study halls may be doing classroom work, (4) provides a source of income for carrying out an extensive visual-sensory program throughout the school, (5) and offers the school a splendid opportunity to correlate and integrate with the courses of study many of the better Hollywood historical and documentary motion pictures, making the program a worthwhile educational tool for the teaching of social, political and economic problems.

Surely no one can minimize the part played by historical pictures such as "Tennessee Johnson" and "Young Mr. Pitt," in the social sciences; actors such as Colman, Massey, Garson, and others, for English classes in speech and drama; musical performances for classes; interpretation of pagentry and color in art; clothes, hair styles, costuming and designing in home economics; scientific developments in science classes; technical discussions in photography; and the morale-building and good-citizenship lessons found in many features and shorts which go to enrich our extra-curricular program.

Public Relations and Vocational Guidance Program

Need for a school public relations and vocational guidance program has long been apparent. Though there are several avenues of approach, perhaps the outstanding one is an up-to-date school film in which the many worthwhile school activities are effectively portrayed. Let me show how our school film, which requires 32 minutes to show and has a recorded lecture for explanation, has been utilized. It is our public relations vehicle. It may be used as a main feature at P.T.A. meetings, church and public gatherings, and has even taken the place of a speaker at commencement. Its value is apparent when used to acquaint various civic groups with the activities of our particular type of school, and justifies to the taxpayer the use made of the hundred of thousands of dollars spent for equipment. In fact, these showings contribute much to the cause of education by selling future educational programs and enlisting

financial support therefor. Parents of prospective students, too, are shown the courses of study and skill possibilities of the school. The film portrays the complexities of a modern school curriculum that has evolved from the little red school house to a modern plant. Furthermore, the school film has brought parent, child and teacher onto a common ground where educational problems can be discussed intelligently; it makes possible an entire review of the school program in a pictorial language where vocabulary and language differences are reduced to a minimum.

Secondly, the school film finds important use by vocational guidance directors. In a large city, junior high school students must make their first big decision in life when they select the high school they wish to attend. A school film gives these junior high school students first hand information. Since John Hay is a commercial school, it is our aim to attract junior high school students who do not plan to continue to college but must aim at either technical or commercial training. The school film reveals more vividly than words the skills of these specialized vocational schools. Students who are movie-minded, recognize the types of skills which they desire to learn and thus can make an intelligent choice of both their school and life work.

Finally, the film serves our own vocational guidance program by helping our 10A students in the selection of their specializing courses. This program sets aside meetings within the first seven weeks of the semester, at which all 10 A students see vocational films and demonstrations of each course of study. They make excursions to the special laboraties and work rooms where they see classes at work. Then, the school film is shown, followed by a discussion to clarify questions. Students thus gain a clear picture of the five vocational courses offered and the electives necessary to meet requirements for graduation.

The Visual-Auditory Program

Since the classroom or instructional film subjects shown each semester in John Hay are numbered by the hundreds, we have found it necessary to show films in several departments simultaneously each day. This is made possible because we have not only a special visual education room equipped for projection but at least one classroom with darkening shades in each department. As a result it is not uncommon for 200 students to see visual programs in one day. Many of the programs are repeated from 9 to 13 times and as many as 40 different classes benefit by them.

The Social Science and Natural Science Departments participate in the classroom visual program

oftener than other departments because there are more films in these two fields. Classes in economic geography are benefited weekly by the many films on geographical areas, and map studies, the products of each area, and the interdependence of nations. In consumer economics, films are shown on alternate weeks dealing with governmental agencies, foods, insurance, and money and management; American history classes have weekly films dealing with discovery, settlement, wars, our country's leaders, the development of our government and our growth. Classes in civics see each week, films that portray the functions of our national government, the work of various governmental agencies, and the many films produced by the Office of War Information, Office of Price Administration, Social Security, as well as the March of Time and kindred films. The classes of economics use films dealing with backward civilization, farming, industrial processes, money and exchange, banks, and documentary films which deal with industry, labor, farm management conservation, salvage, and the war. Home economics classes use films on nutrition, foods preservation and cookery, textiles, budgets, etiquette, personal regimen, pottery, dress, and furniture. In social problems we have twelve programs of films on conservation, city planning, slum clearance, sociological problems, governmental developments, city improvements, transportation and communication and agriculture.

Natural science classes, in first and second semester physics, follow a prescribed course of study with suggested films weekly, on pressure, simple machines, water, aviation, electricity, light, heat, sound, and biographical films on leading scientists. Biology, beginning and advanced, utilizes film materials on plant, animal and human life, each grade having one film program per week and quite frequently two. Automobile driving classes have a weekly film program on various parts of the combustion engine, spark plug, lubrication, petroleum, etc. In senior science I and II, we have weekly films dealing with all phases of household needs, scientific development, building, etc. The photography classes make occasional use of certain films for shadow effects, color, and other photographic techniques.

Classes in art use films on pottery, poster making, carving, etching, buildings, and cathedrals, and many other subjects. Color cartoons, scenic shots and moving animals find a welcome in these art classes. Classes in physical education utilize several of the war information films on first aid, life saving, physical developments, and certain indoctrination films which portray our enemy and his ways. Classes in English make very limited use of motion pictures because (1) all classes listen weekly to special radio lessons which are broadcast over our school station and (2)

because suitable feature films are too long to show in a class period and time does not permit showings after school. Plans are, however, being formulated whereby some experimental work will be done with films as an aid in encouraging essay writing and vocabulary building.

Some use of motion pictures is made by the Commercial Department. A limited number of films are adaptable to courses in typewriting, stenography, bookkeeping, office machines, business information and mathematics. Some programs are arranged for this department by using films on telephone techniques, general office practices, vocational guidance and commercial films produced by individual office machine manufacturers. In order to meet the need for a visual aid in typewriting, we have produced our own film on typewriting techniques, especially for beginners, and it is being rented by many schools in various parts of the United States. Our Retail store course uses films on manufacturing processes, merchandising, advertising, selling procedures and store management.

FACILITIES AND EQUIPMENT

This intensive use of films in our classroom is made possible by our extensive facilities. Portable projection equipment for use in classrooms comprises four 16mm projectors, two sound and two silent. Eleven classrooms and a special visual education room are provided for visual programs.

The visual education room at John Hay, which is unique in Cleveland schools, merits further description. This room, 25 by 70 feet, seats about 200 students, is accoustically treated, has a sloping floor for unobstructed vision and an enclosed projection booth in which all machines are placed. The films are projected on a 8 x 10 screen. Here too is a small stage equipped with a large demonstration table where teachers may follow up the visual program with displays, charts, experiments or around which a panel discussion may be carried on. In the projection booth in the rear are permanently installed at their respective port holes a 16mm arc and a 35mm arc projector. A third port hole may be used for a slide machine. The amplifier in the booth is used for sound on film, playback unit, and microphone, outlets for which are either in the front of the room or in the booth. This room because of its size is used especially for programs where two or more classes meet the same period, for guidance and special visual programs.

Perhaps the vehicle that has stimulated the greatest utilization of motion pictures is our film card catalog. Each department head has available in a special film file a 4 x 6 card of all films for each subject in his department. Each card gives full

data on the film, including a short synopsis and a teacher evaluation. These files are continually being added to so that at all times they are nearly up to date. The use made of this card catalog is reflected in the constantly increasing demand for film. Department heads appoint teacher committees to draw up schedules for each subject. These are then sent to the director of visual aids. The director arranges for all booking with distributors, arranges for payment, receives and returns all shipments, arranges for rooms in which the program is to be shown, cares for all equipment, and provides operators; in fact, he leaves to the class teachers only the problem of providing the class and teaching it. This co-ordination between class teacher, department head and the director of visual aids has led to a harmonious relationship, and a wider use of film programs at the time when class teachers can best utilize the films.

At John Hay High School, the motion picture film has become undoubtedly the most effective tool in education to convey human experiences, create attitudes, and tell its story in the most convincing and lifelike manner. When properly projected, the motion picture gives every member of the audience a front seat from which to view an event. The recent development of sound motion pictures, with their carefully edited and prepared lecture, are preferred over silent films because they give the student a simultaneous reception of multi-sensations which tend to increase his illusion of reality and stimulate his emotional responses. When one considers, then, the triple role motion pictures must fulfill in our school program, and the fact that our motion picture program plays such a vital part at John Hay, one realizes what efforts are put forth each semester to secure the hundreds of films needed, and why no expense can be spared.   ✪ ✪ ✪
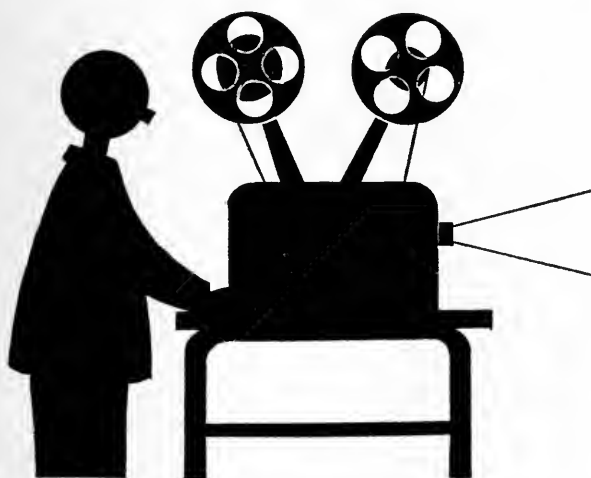
I am reporting on my experiences with the use of audio-visual materials in the English classroom. Four of the teachers in the English Department of the Newark (Ohio) High School asked me to demonstrate the use of a documentary film as a means of motivating the language arts skills of reading, writing, speaking, and listening.

The Documentary Enters the English Classroom

By
BERTHA L. CRILLY
See and Hear, Vol. 1, No. 1, Sept., 1945. Pp. 21-26.

The Public Library loaned us fifty or more books and pamphlets on South America for a long period. Each teacher had a map and a globe in the room. The film, *The Bridge*, was rented by the school for a week so that each class saw the picture twice. The classes were comprised of industrial students; two of the classes were all boys. Tenth and eleventh-year groups were chosen for the experiment. In every class, the day before the film was shown the first time, volunteer students presented informal talks on the geographic, economic, and political situation in South America. After the first showing, the class response to a discussion was practically one hundred per cent. The film was then shown a second time. All of the pupils wrote a short paper in class on some phase of the picture after the second showing. As one teacher expressed it, they definitely had ideas to write about. Many read the books and magazines that had been brought into the classroom and made written or oral reports of these.

All four of the teachers considered the use of such audio-visual material an excellent stimulus for speaking and writing and to a lesser degree for reading. All wish to do more next year. The administration of Newark is favorable to the use of visual aids in the classroom.

The following outline shows the procedure used in the successful presentation of a film in these English classes:

Plan for Using a Documentary Film, *The Bridge*, as a Teaching Aid with an Eleventh-Year Class of Industrial Students. Time of Showing — 20 minutes.

OBJECTIVES

1. To promote an understanding of an important problem of today; i.e., the relations of the United States with South America.
2. To induce reflective thinking based upon factual knowledge.
3. To promote observation and thus give ideas.
4. To serve as an inspiration for reading and writing.

PROCEDURE

On the day before the showing of the picture five- or ten-minute oral themes on the following topics were given and discussed by the class:

1. What is meant by Good Neighbor policy?
2. Position of Argentina in relation to the United States?
3. Raw materials of Chile used in the United States.
4. Geography of South America.
   Emphasis upon the Andes and the Amazon and jungle life.
5. The type of airplanes used for freight transportation.

Second Day. The following questions were placed on the board and read by the class:

1. What does the title, *The Bridge,* mean?
2. How do the people in remote villages live?
3. What is the health situation? Causes for it?
4. What agricultural methods are used in South America today?
5. What is shown of the development of the rubber tree?
6. Would you want to go there to work? To live permanently?
7. What kind of positions are available to what type of trained men and women?
8. Does the presentation of the home life of the people add interest? Why?
9. Are there sufficient natural resources in South America to make the modern standards of living in the United States possible there?

First showing of the film without comment by teacher or pupil.

Discussion of the foregoing questions and any other ideas suggested by the class.

Pupils chose topics that interested them for writing.

Second showing of film:

Pupils took notes.

Teacher made comments, such as,

"Notice the nearness of South America to Europe, possible war danger if South America is not friendly to the United States."

"Argentina has the same things to sell as the United States."

"Winding roads are necessitated by the mountains."

Class discussion and writing. Plan for writing: length of theme; three paragraphs of approximately 150 words each; notes taken during second showing used as well as additional ideas brought out in the class discussion.

Arrangement of the ideas in a short outline; such as,

Importance of the Airplane to South America
I. Geographical and Geological Facts
II. Capacity and Speed of Airplanes
III. Results of the Use of the Airplane
   A. To South America
   B. To the United States

The themes were written in class in ink. The themes were read and discussed. Questions about mechanics of English were asked.

Alternate plan for written composition: themes started in class; themes written first in pencil, revised, and corrected; themes copied in ink and handed to the teacher; after the themes have been read by th teacher, have some of them read in class . . .

Readings Suggested: (1) "Green Mansions"—W. H. Hudson, an idyllic romance of South American outdoor life; (2) "Far Away and Long Ago"—W. H. Hudson, autobiography of a man who spent his boyhood in South America; (3) "A Booklover's Holiday in the Open"—Theodore Roosevelt, chapters 4, 5, 6, 7; (4) "Inside Latin America"—John Gunther, political situation; (5) "South American Sketches"—W. H. Hudson; (6) "South America and Hemisphere Defenses"—J. F. Rippy; (7) "Meet the South Americans"—Carl Crow; (8) "Transgressor in the Tropics"—Farson Negley; and (9) "Land of Tomorrow, a Story of South America'—R. W. Thompson.

Oral Composition: oral themes were developed from ideas suggested by the picture and by readings. A panel discussion or a debate could have been arranged.

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For years the librarian and I tried unsuccessfully to help our high school students understand how to find, select, organize, and record materials for their "term" papers. Our lectures (and many much better than ours) simply went "in one ear and out the other."

Short Cuts in High School English with Opaque Projection

By
ARNOLD LAZARUS
Teaching Tools, Vol. 1, No. 1, 1953. Pp. 10-11.

Even the champions of audio-visual instruction are among the first to admit that audio-visual presentation is not so effective as the primary experience itself—the direct field trip. *En masse* to the library, therefore, we made as many field trips as possible. But such *group* movements (as distinguished from each younger's *personal* "field trip" became decidedly impractical after the first week or two of orientation. It was just not feasible to have freshmen milling around card catalogs that must be used by hundreds of other students.

When a film on the subject came along (Coronet's *How to Use the Library*), we thought we had our problem conquered. After showing this film, we were sure we had *some* good results. At least the youngsters seemed to grasp an overall picture of the purposes and techniques of library research. Yet when matters came down to the specific daily details of our semester-long projects, we were still stymied.

These youngsters needed more than just one initial overview that barely touched a tremendous number of such details as locating articles in "The Reader's Guide," boiling down exposition, acknowledging indebtedness and citing authorities in footnotes, and making bibliographies. The students were operating under one of the natural laws of learning — they needed *repetitive exposure*.

Then we saw a demonstration of an opaque projector at an audio-visual "Institute." The subject was biology, but we immediately saw the tremendous possibilities the use of this machine could make in our classroom presentations of the language arts.

Without the confusion of youngsters milling about, we projected — for smaller groups in individual classrooms — catalog cards (author, title, subject), specimen outlines (topic, sentence, correct use of letters and numbers), exemplary note-cards (direct quotation, paraphrase, précis), specimen term-paper pages with footnotes, and specimen bibliographies. We projected and discussed these details, as often as necessary and at psychological moments.

As we flashed this material on the screen, wonderful things began to happen. For the first time the students were catching on, evident not only in their reactions but also in their compositions.

It was no longer necessary (in fact it was superflous) for us to give lectures and "verbalisms" about the mechanics, for instance, of parallel structure in outlines. On the screen we *projected* a well-constructed outline. There it *was!* Big as life. The opaque projection of that outline (or notecard or bibliography) made the abstractions *real*. I am convinced that too many words (lectures) are worthless in teaching below college level.

What the opaque projector does:
1. Uses reflected light to magnify on a screen — pictures, pages of books of periodicals, cards and specimens of student work.
2. Projects on the screen many materials other than films and slides.
3. Focuses students' attention.
4. Teaches details that require close and repetitive observation.
5. Makes verbalisms and abstractions come to life.
6. Supplements, not replaces, good teaching; relieves the teacher of much drudgery.

Progressing from the use of opaque projection in library research and term projects, we gradually developed a host of other educationally effective applications.

We now use the opaque projector in teaching spelling. It is a well-known fact that certain words cause more trouble than others. In the words *separate, accommodate*, and *recommend*, for example, we help impress correct visual images (we also reinforce these orally) by flashing on the screen the words printed thus: sep *A* rate, a *CC* o *MM* o date, re *C* o *MM* end.

We use the opaque projector to help students build vocabulary. Taking words they have seen or will see in the context of their current reading, we flash them on the screen. We particularly select words with key prefixes, roots, or suffixes (regardless of origin) and then make a game of letting the students put these syllables together in new combinations. For example, a few selections like *pre, trans, script, scope, phono, graph, tele*, and *logy* provide endless fun as well as mind-stretching.

We now use the opaque projector in teaching punctuation and business letter forms. You may talk from now until doomsday about "block style" and "modified block"; you can speak of "heading" and "saluation," and "complimentary close"; you can try verbally to get students to remember the "colon after saluation," "comma after complimentary close," which words to capitalize, which words not to capitalize— you can have an unbreakable attachment for lecturing. Or! You can flash *actual specimens* of examples with an opaque projector.

We use the opaque projector to help our students improve their composition. I am not suggesting that there is any better way for a student to learn how to write except by writing abundantly. Here I refer to what happens after he has written, to recognize his areas of weakness so that he can improve succeeding papers.

If we teachers of composition could put end-to-end the number of hours we spend marking compositions, the resulting figures would be astronomical. And ironically, the time we spend on just one paper is for the benefit of only one student. Obviously, there must be a more economical use of teacher-hours.

What if we could flash a paper on the screen (with the writer's name bent under) and let the entire class criticize, pointing out excellences as well as places for improvement? What if we could make the entire class take some of the responsibilities for self-improvement? What if we could lift the tremendous, thankless drudgery of evening paper-cor-

recting from the shoulders of red-pencil-pushing pedagogs?

At our school we not only *can* emancipate the English teacher but *do* — chiefly by means of the opaque projector.

Perhaps there is more justification for skepticism on the part of the teacher who, years ago, tried the "opticon" of one kind or another and gave up. This teacher who bases his objections on his experiences with the crude, experimental machine can well protest:

"But you can't get more than a 3x5 card on the confounded contraption!"

Answer: The present improved machines take sheets up to 8½x11.

Objector: "But you have to spend too much time before class in cutting and mounting your subjects or specimens!"

Answer: This operation is no longer necessary. One of the new machines has an automatic "feeder"; another projector has a handy sliding tray with ingenious little paperweights that have been magnetized.

Objector: "But you make a shadow when you try to point out details!"

Answer: This "bug" is eliminated in new machines by a built-in pointer.

Objector: "But you have to use the projector so close to the front of the room that the whole idea is impractical in classes containing over 30 youngsters."

Answer: Unfortunately this is true. Opaque projection is impractical in large classes. Classes of more than 30 youngsters have hamstrung educational goals for reasons beyond the scope of this article. In larger classes of my own, however, I have partially overcome this obstacle by having the students in the back half of the class move forward to share seats with those nearer the front. It goes almost without saying that in the use of any instructional material, *all* the students deserve the best possible facilities for hearing and seeing.

We found that opaque projection techniques have certainly contributed to some of the students' most significant "seeing" as well as some of their most truly educative experiences. And we have only begun to develop the multiple uses of this teaching tool.   ⚬ ⚬ ⚬

Editorial note: The previous article is a case history which shows how the opaque projector saves time. In the next is a case history of the planned use of radio to increase reading.

Billy was writing the titles and authors of books on the blackboard. Tommy was leaving the classroom, headed toward the principal's office to help warm up the central sound system and send *Reading Is Adventure,* to room S-9. The 37 seventh graders in room S-9, as they follow their problem, learning to read more widely and more selectively, are preparing to listen to *Reading Is Adventure,* one of the five series of the Texas School of the Air programs.

Reading and Radio

By
MILDRED JACKSON
and
A. L. CHAPMAN

The series, *Reading Is Adventure,* is designed for junior high students. Librarians and language arts teachers selected a list of about six books for each of the thirty weekly programs. These meet four criteria:

1. The books are suitable for children at about the ninth grade level.
2. The books are in most junior and senior high school libraries.
3. The books are those which adolescents enjoy.
4. The books are acceptable to language arts teachers in meeting the requirements of "parallel," "outside," or "required" reading in English classes.

FIFTEEN BOOK LISTS INCLUDED IN FREE GUIDE

There are fifteen different categories of books. The "Teachers' Classroom Guide," which is furnished free of charge by the Texas State Department of Education, contains the titles and authors of the books, and suggestions for using *Reading Is Adventure.*

The programs, which are produced at Radio House at the University of Texas are designed to cause the students to want to read the *Reading Is Adventure* books and other similar ones. *The aim of the radio programs is to help junior and senior high school teachers do better that which they are already trying to do.*

The problem of getting enough books for the seventh-grade level is met by the book committees of students. One book committee canvasses the school library on Monday and Tuesday for *Reading Is Adventure* books for the week. Another book committee of students canvasses the trailer library, which is a branch of the city public library. All the available books are then brought to the classroom on the day of the broadcast and checked out after the broadcast. Each day thereafter from five to ten minutes are used to permit the students to exchange books. During the entire week Billy's list of *Reading Is Adventure* books remains on the blackboard.

THESE ARE THE TEACHER'S RESPONSIBILITIES

No problem of curriculum correlation arises because it matters little whether one of the children reads *Adventures of a G-Man* the first day of school or the last; nor whether he reads 20,000 *Leagues Under the Sea* before or after he reads *Treks Across the Veldt*.

Once the series has gotten under way in the fall and the students have worked out the "machinery" for listening, the teacher has only two major responsibilities:

1. To act as referee and judge during the distribution of books on the day of the broadcast; and

2. To appoint the book committees each week.

Except for helping the students work out plans for excursions, producing a simulated broadcast or something of that sort, the utilization activities are pupil centered and almost spontaneous.

The chief outcome of the use of *Reading Is Adventure* is the opportunity for the students to work together in a cooperative enterprise. All of the activities resulting from listening are initiated, planned, and executed by the students. The teacher serves as "assistant" and advisor.

The students, whom you would have seen if you had visited room S-9 in Fulmore Junior High School, read a total of 538 books during the year from *Reading Is Adventure* list. This average of 14 books per student is for the class in which 21 of the 37 students are boys. Thus, all students in the group had an opportunity to get well acquainted with the school library and with the librarian. Students actually learned to be more discriminating in the selection of books to read than the students at the same grade level who did not listen to *Reading Is Adventure*. As they read, they developed and practiced "good listening habits." So students learned some degree of radio program discrimination.

Language facility progressed; pupils produced their own radio program. They drew pictures, wrote poems, wrote letters, organized field trips, learned to differ with others without offending, learned to communicate to others in the group the reasons why they "liked" or "disliked" a radio program or a book, *and they learned that a "loud argument" is not necessarily an "effective argument."*

And we believe that if you go into the homes of some of these seventh graders about a decade from now on a rainy evening, you'll find some of them curled up on the sofa reading a book "just for fun." For to them, Reading IS Adventure.

The Use of Audio-Visual Aids in the Study of Spanish in the Junior High School

By
MABEL CLAIRE KEEFAUVER

More than three hundred years ago, Quevedo, the brilliant, cynical satirist said: *"Poderoso caballero es don Dinero"*. . . powerful gentleman is Mr. Money!

That is as true today as it was yesterday. And it automatically divides the audio-visual aids to be used in the study of Spanish into two groups: those that cost money, and those that do not — that is, do not cost much money. Everything costs something.

Whereas Quevedo was inclined to be cynical and satirical about the value of money, we can be more realistic and calm. Audio-visual aids that do not cost much money can become a part of the students' experiences. For this reason they are highly effective.

One of the most delightful and time-honored visual aids is the neighborhood store transferred to shelves within the classroom. This is a natural continuation in junior high school of the elementary school store where functional English and arithmetic first were practiced. The same teaching and learning pattern can be used for the spontaneous acquisition of a foreign language. More years ago than it is pleasant to enumerate, my seventh grade teacher encouraged us in our study of Spanish by creating within the classroom a lifelike situation wherein we could discover for ourselves that we could use what we were studying. My students today seem to enjoy going to the store "in Spanish" as much as I did years ago.

INEXPENSIVE AIDS HELP

The collection of the visual aids, the objects to be sold in the store, affords a splendid opportunity for student activity, resourcefulness, and imagination. They enjoy bringing from home the cans, bottles, and boxes that had contained their favorite foods. All the containers are washed so that the articles on the shelves are as fresh and new as the day they were purchased in the real store. The cellophane bread wrappers are stuffed with confetti, making very realistic looking loaves of bread. One teacher had a pupil whose father worked for an advertising firm which used wax and clay models of food to help advertise frigidaires. Their store was tantalizingly realistic. In our meat department, we had to content ourselves with pictures of steaks, chops, and turkeys cut from magazine advertising and pasted on cardboard. But that homemade realism had its compensations. When the storekeeper

excitedly insisted in Spanish that he had a thick juicy steak for sale, all the time waving the cardboard representation around in the air in his eagerness to express himself in a new language, the ridiculousness of his earnest statements made the other pupils laugh. In this way there was created that happy, relaxed atmosphere in which a student learns so well because he isn't afraid, because he is learning by doing, and because doing is fun. Most of our fruit was wax fruit from the five and ten cent stores. Local storekeepers with whom students worked or traded donated paper bags of all sizes, and even sales checks to record all purchases. Our money consisted of various sizes and colors of paper money used in games, and even of occupational money garnered from relatives who had been in the war. The metal coins were a collection from all over the world.

After many years of teaching, it still surprises me how much faster students learn a word, how much longer they seem to remember it, and how much more fluent they are in its use when it is actually associated with the object, person, or situation to which it refers. Numbers can be learned and forgotten overnight if they are learned merely as vocabulary words, never to be used. But they seem to stay in mind quite consistently all semester when used to make change for a classmate who comes to trade in the "Spanish" store. Important grammatical principles come to life and actually blossom when applied to concrete visual aids. Take for instance the indispensable fundamental of the agreement of nouns and adjectives. Be sure to have big and little jars on the shelves, big and little bottles of coffee, milk, etc. Then the student can really practice: *un frasco pequeno* . . . or . . . *una botella pequena,* etc., each student picking up the article as the words are spoken. When the object itself can be visualized and handled, it seems as though the verbal and grammatical symbolism can be visualized and handled too.

The use of these stimulating visual aids can be adapted to any teacher, class, or situation. They are very flexible, and can be regulated to suit any age level or time limit. The foregoing remarks are of course merely indications of what can be done. A whole book could be devoted to the matter, not just part of one article.

Another traditional source of visual aids that stimulates the study and use of a language is the dining table around which family or friends gather to eat and discuss the day's happenings. This teaching and learning situation is adapted from the college custom of maintaining a Spanish, French, or other foreign language table in the dining room where students of that language gather to eat, and where only that language is spoken. The conversations start with and center around the food and other concrete objects on the table. Here again, the association of new words with familiar objects and situations facilitates the mastery and use of another way of saying the same thing.

It is easy to gather odd bits of china, silverware, and table linen and recreate a happy family circle within the classroom. The visual aids become the props in an impromtu play, and the lesson becomes a dramatic performance rather than an uneventful recitation. As in a stage play, much can happen in this familiar setting. The family can decide to take a trip around the Americas. Plans can be made for that trip. Other audio-visual aids can be brought into the scene. Maps, pictures, and phonograph records will be necessary. And here again, as in the case of the store, the essential grammatical principles of the language really take on meaning when they become embodied within the objects and situations to which they refer. *¡Compre usted cuatro billetes! ¡Comprelos hoy, porque manana saldremos para la América del Sur!* Buy four tickets! Buy them today, because tomorrow we leave for South America!

Newspapers, Magazines, Recordings

Now we move into the realm of audio-visual aids which cost money. Newspapers and magazines printed in Spanish are especially desirable because they afford completely modern news and views. *La Opinión,* the fine Spanish language newspaper of Los Angeles, costs twelve dollars a year and is delivered to the school. Each day a different pupil can show the paper to the class, and read and translate the best picture in the paper to be cut out and added to the permanent collection of pictures kept in a scrapbook. The selection of this picture should be made with the greatest of care. The name of the book might well be: *El Buen Vecino* (The Good Neighbor) or *El Progreso* (Progress). It would contain only those pictures which point towards the progress of inter-American friendship. Mexico City's fine newspaper, *El Universal,* and the two colorful magazines, *Hoy* and *Mañana,* are splendid visual aids. A Spanish language teacher can well afford to subscribe to them herself, if money is not readily available in the school budget.

There are two sets of records which are available audio aids. There is an album of five records spoken by T. Navarro Tomás. They are "Spanish Pronunciation and Intonation Exercises" based on his book, *Manual de Pronunciación Española.* They can be secured from the Linguaphone Institute, Rockefeller Center, New York. Then there are the New World Spanish records, available through Victor

Record dealers. They have been made exclusively by native Spanish American speakers. The two sets of records give complete examples of Spanish and Spanish-American pronunciation, and therefore are splendid audio aids for the teacher of Spanish who is not a native herself, and for the students who have never had the opportunity to talk with natives of the Spanish speaking countries. The students derive a great deal of satisfaction and self confidence from studying with these records and realizing that they are able to speak as the native Spanish people speak.

In many of the drama departments today, recording machines of all types are in use to study tone quality and the proper use of the voice. These could be used to great advantage in foreign language classes, too, in conjunction with the above-mentioned records. Students could compare their speech with that on the records. These recording machines were used by the army language classes during the war, and it may not be too long before school budgets can be expanded to include them . . .

USE OF SLIDES

A fascinating addition to any language class is a daylight, overhead projector. The teacher or pupil using the projector stands in front of the class, as in a regular recitation. The daylight projector allows the room to be light enough to view one another clearly, to write, and still to see the image projected on the screen. But the advantage of this visual aid which fascinates me is that the handsome slides which can be made so easily on inexpensive etched glass and used over and over again, can capture and hold the pupil's attention which so often wanders off and gets into mischief in the old-fashioned language class. How many times has a student, while waiting for a classmate to finish translating some sentence or conjugate a verb, drawn pictures in his textbook, or carved them on the desk top, or sketched them on a piece of paper which he surreptitiously passes around the room, finally upsetting the attention of the entire class. What a waste of good time and talent, not to speak of vital interest. It's high time these tendencies are guided into legal channels. That spontaneity could be discussed in Spanish. The titles of all those funny pictures could be in Spanish. They could be projected on the screen for the whole class to see and discuss in Spanish. Mischief could become a respectable citizen within the classroom, livening things up considerably. Each student could be held responsible for the making of one handmade slide, and its presentation in Spanish to the class. For the less creative ones, it might be the careful reproduction of the flag or coat of arms of a neighboring America; it might be the words and tune of a folk

song. The student could not only prepare the slide and discuss it in Spanish, but also draw up a short test, on the miniature lecture thus presented. The variations are endless. The exciting thing is that the use of this visual aid would stimulate student interest and participation, and help keep the attention centered in one place.

MOTION PICTURES

The last and the most important of the audio-visual aids to be mentioned is the motion picture. At this writing, there are no Spanish language films showing Spanish American locales and cultures which are designed especially for use in a language class. This is a development which undoubtedly will occur within the years to come. Its development should be made by the language teachers themselves who know exactly what they need in this respect.

In 1944, the American Council on Education published an unusually fine book on *Latin America in School and College Teaching Materials*. The chapter on Educational Motion Pictures included these important and revealing statements: "In view of the importance of motion pictures in teaching about foreign countries, this study has shown that an inadequate supply of effective educational films is available on the other American republics. . . No production has been undertaken specifically for integration within the language courses. . . It is recommended to producers that the need for additional materials is great and widespread."

Speaking of the films which are available, this authoritative book has this to say: "There is no film included in this study which, if used at the right time and place, will not be of some value to a teacher. However, the weight of the total number of pictures in this study is so heavily on one aspect of the peoples to the south of the United States that it will be extremely difficult for the teacher to make a selection of films which will present a balanced impression. The teacher who uses films has the responsibility of preparing the class for the showing, clarifying points during exhibition, answering questions after the showing, and guiding subsequent activities inspired by the film. In using many of these films, an additional heavy responsibility rests with the teacher — the provision of balance, not of facts and information, which would be comparatively easy, but the balance of impression and understanding. The visual material provides a partial but vivid impression which, if not supplemented and completed by an equally forceful and balanced impression, will create an enduring false concept."

This word of warning must be heeded carefully in all uses of audio-visual aids, either homemade or

expensively produced. The use of audio-visual materials makes the impressions more vivid and more lasting. Greater and greater care must be exercised in the selection of the thought content, and of the emotional impact of the work to be projected by the means of the audio-visual aids. It is a challenge which must be met.

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Since the turn of the century, efforts to improve mathematical education have taken several directions. Some of the things which have been tried have worked out pretty successfully and have taken root. Others have not worked out so well and have been discarded. Still others are yet in the experimental stage.

Meaningful Mathematics

By
CHARLES H. BUTLER

On the positive side, it can be noted that general mathematics has emerged and grown until it has become a typical part of the mathematical program of the junior highschool. Noteworthy and helpful modifications have been made in the courses in algebra, geometry, and trigonometry, tho much remains to be done.

WE SEE THAT . . .

There has come widespread recognition and acceptance of the principle that courses which are suitable for some students may not be suitable for other students, and that parallel courses of different types should be offered, particularly in grade nine. New types of teaching aids have been devised and made available, and work of a laboratory type is becoming more common. In some highschools, special courses such as vocational mathematics, shop mathematics, and consumers' mathematics have been organized for students who have special interests in these directions.

On the other hand, efforts to teach mathematics thru such plans as the activity program, socialized mathematics, and the core curriculum have not been very successful. Efforts to devise suitable courses of general mathematics for grades above nine have met with little success. . .

THE BIGGEST CHANCE

Probably the most significant change in the whole program of secondary-school mathematics has come in the junior highschool, where general mathematics has practically replaced straight arithmetic in grades seven and eight and has become the typical alternative to algebra in grade nine. This change has come about in a gradual, orderly, and unspectacular manner over a period of years.

Closely related to this, and of comparable importance, is the growing acceptance of the double-track plan for grade nine. It is more than an acceptance in principle. It is being put into actual practice on a large and increasing scale.

It provides a much needed alternative to systematic algebra for those students who do not wish to take algebra or who cannot pursue it with much hope of success, but who need further work in order to attain a genuine mastery of the mathematics of common usage. At the same time, it reserves the algebra course for those students who wish to take it and who can profit from it, and thus tends to counteract the deplorable but common tendency to dilute the algebra.

It has been recommended that the double-track plan be extended into the senior highschool grades, but up to the present time not much real progress has been made in this direction. . .

LEARNING WHAT IT MEANS

Substantial improvements have been made in the traditional courses in algebra and geometry. It is probably a gross oversimplification to try to characterize them all in a single word, but the one thing that seems to stand out most clearly is a marked emphasis on *meaning*.

In algebra, this emphasis can be noted in many connections. For example, formulas and graphs are introduced very early in grade nine, and are given increased prominence with a heavy accent on the concepts of variables, variation, and dependence. Operations with signed numbers are being rationalized. The solution of linear equations is coming to be taught as a rational procedure with the reason for each step being made clear instead of merely as a formal application of memorized rules.

Transposition is giving way to the rational operations of addition and subtraction. Operations with fractions are made to seem sensible by careful explanation and analogy. Parentheses are coming to be treated informally, and the formal rules for "removing" parentheses are being found unnecessary. Work in factoring and operations with fractions is being confined to simpler cases than formerly, but with more stress on understanding and explanation.

In work with verbal problems, more and more emphasis is being placed on such things as ability to analyze problems, to select essential data, to perceive relationships, and to formulate solutions.

These things represent genuine progress in the teaching of algebra. They are illustrative of the thorogoing and continuing effort to remove from elementary algebra the objectionable "formalism" against which so much legitimate criticism has been

directed, and to replace it by an algebra which students in their early teens can understand.

There will always have to be rules and definitions, and procedures will always have to be formalized in the sense of being generalized, for this is the essence of algebra. But the formalization of procedures in ways which convey meaning to the students, and at a level appropriate to their maturity, is not objectionable.

THE EMPHASIS IS DIFFERENT

In like manner, one can observe in demonstrative geometry modifications which indicate increasing emphasis on meaning and understanding. Good teachers are not satisfied with the mere stereotyped rehearsal of memorized proofs. On the contrary, they insist more and more that their students be able to state and justify their plans of proof, answer extemporaneous questions about their work, and give evidence that they really understand what they are doing, why they are doing it, and what mathematical right they have to do it.

Increased attention is being given to the matter of making students aware of the real nature of definitions and assumptions, of the role these play in logical reasoning, and of the nature of proof itself. Independent reasoning is encouraged by stressing original work. Objectionable formalism is reduced by decreasing the emphasis on memorization.

Students are being taught how to invent proofs by use of the analytic approach to problems, as well as how to present their work in completed synthetic form. The concept of the indirect method is coming to be taught as a well-defined method of strict reasoning rather than as a miscellaneous bag of tricks. The concepts of variation, dependence, generalization, and continuity are being strengthened by grouping certain sets of theorems and studying their common characteristics.

The dynamic and practical aspects of locus are being emphasized. These and many other things bear witness to the fact that demonstrative geometry is coming to be taught more and more as a way of thinking, a method of reasoning which can be applied to both mathematical and nonmathematical situations, and less and less as a mere ritual of memorization.

In both algebra and geometry, teachers are making increasing use of special multisensory aids and devices to clarify meanings and concepts. They include not only films and slides but also models, charts, diagrams, instruments for laboratory and field work, and other special devices. They cannot be regarded as substitutes for teaching, but when wisely selected and used they can often be very

helpful in supplementing explanations and discussions.

After the character of the secondary schools changed with the great influx of non-college-bound students, many people acquired an almost emotional reaction against requiring or even advising any mathematics beyond the barest minimum for those not expecting to go to college or to enter professional or technical occupations. . .

OUR DIRECTION IS CHARTED

A review of changes in mathematical education over the past half century indicates that we are moving toward a program of mathematical instruction that will in most respects be better adapted, and more functional and educative than the typical program of 50 or 25 or 10 years ago.

But we shall always have problems to face. In the past decade, more than a thousand articles dealing with various matters related to mathematical education were published in the United States. This indicates a wide scope of interest.

Problems of mathematical education will find their solutions more and more thru research and experimentation and interchange of ideas. National, state, regional, and local organizations sponsor meetings each year for the discussion of questions related to mathematical education.

Large and increasing numbers of mathematics teachers are taking advantage of these opportunities for discussion and interchange of ideas and information. This vigorous interest itself represents a promising trend in mathematical education. In the end, it may prove to be the most important one of all.

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Are you one who oils his reels and inspects his tackle all winter in anticipation of that two-week fishing trip in June? Do thoughts of a drive to a favorite lake, mountain stream or seaside beach bring you through the humdrum of routine life? If so,

Afield in the Classroom

By
JAMES H. OTTO
Visual Review. 1947. Pp. 15-16, 73.

you are an average American — a generation or so removed from the farm — an urbanite by chance but a naturalist at heart.

If you are a teacher of biology, how many pupils have brought in an insect larva, a can of tadpoles, a curious seed pod or a wild flower with the familiar question "What is this?" Interest in the out-of-doors is almost universal in America. As a nation, we are still close to nature. This natural interest presents a challenge to the teacher of biology. How can it

be developed? How can we best produce a generation of young citizens who will find the greatest happiness in out-of-door recreation? How can we promote an attitude of respect for our living resources and cooperation in the gigantic conservation program we all must face?

Certainly these objectives are prime in the teaching of biology. But achievement of such worthy goals is another matter. Biology courses have emphasized the principles governing life. Anatomy has been stressed in the study of plants and animals, alive or preserved. Physiological processes have been demonstrated in controlled experiments, demonstrations and accurate word descriptions. But what about the organism in its native haunts? What about field biology? This phase of study presents quite a different problem.

The average pupil attends either a city high school or a consolidated school in which biology is a part of an already crowded curriculum. Perhaps the only opportunities for field study are the limited facilities of the school grounds or a nearby park. Even if natural environments are within reach, time does not permit a trip during the biology period. How, then, can interest in field biology be cultivated or maintained in the artificial surroundings of the classroom?

Biology teachers, realizing this need, have put forth much effort in maintaining displays and exhibits within the biology classroom in the form of balanced aquaria, terraria, seed and leaf collections and small forms of animal life suited to temporary confinement in the classroom. On a limited scale, these exhibits add much to the atmosphere of a biology course. However, the pupil still has not hiked through ravines or woodlands.

The present age of transportation calls for even greater enrichment of the field phases of biology. Modern automobiles, streamlined trains and high-speed airplanes will carry our pupils to every corner of America. The deserts, plains, prairies, alpine meadows and wooded hills we discuss in biology will be traveled by future Americans. To the informed and interested traveler, modern transportation facilities will offer untold enrichment of life through widely varied experiences in nature.

In recent years biology teachers have made increasing use of visual aids as a means of bringing nature to the classroom. Through the medium of 16mm. sound films, Kodachrome slides, filmstrips and other teaching tools, the laboratory may be transformed into a pine forest, a bog or a seashore on a moment's notice. The pupil may observe, first-hand, the life of those places beyond his present experience. Biology takes on a new meaning. It becomes inspirational and aesthetic in addition to being scientific.

The author does not mean to infer that field biology should replace the teaching of principles, the study of structure and adaptations and other conventional phases of the course. Rather, "biological travels" through the medium of visual aids should supplement these other phases.

For example, the study of a bird as a vertebrate reveals a wonderful series of adaptations for life in the air. Anatomical and physiological considerations of a bird are vital biological experiences. Migration, nest building and care of the young are ideal topics for behavior study. But a study of bird life would not be complete without some emphasis on field work and identification. Long after more technical considerations of bird life have been largely forgotten, the student who developed interest in bird field work will be journeying to the wilderness at every opportunity to catch a glimpse of the first bluebirds or warblers or to bring some wild ducks into range with his field glasses.

Again, problems arise in instructing high school pupils in the techniques of bird study in the field. Few birds will tolerate the intrusion of thirty high school pupils even if outside trips can be arranged. Certainly, the inexperienced observer will need direction. Though other procedures may be worked out, the most logical plan seems to be advance study of the birds of a region in the classroom before individual or group field work is attempted. The list of available Kodachrome slides of bird subjects is extensive and constantly growing. A set of twenty-five to fifty slides will cover most of the common birds of any region. Kodachrome slides have the distinct advantage of accuracy as to both form of the subject and its color and distinctive markings. As these still-life subjects are shown, identifying characteristics may be pointed out and discussed with

the class. If further information concerning habits, food, nest building, care of the young and other characteristics of a species is desired, pupils may prepare reports to accompany showing of the slides. After observation and discussion of birds in still life, motion pictures showing the same birds in action will offer a slightly more advanced type of study. The climax in such a program of bird study will follow in the field when the pupil observes the bird "in the feather." He will no longer require close direction and may even make trips himself, although he would profit much in having a more experienced person with him.

But the study of bird life is only one sample of the possibilities afforded by Kodachrome slides and filmstrips. Pupils are invariably interested in reptiles. Today, a wide variety of snakes, lizards and turtles may be shown to enrich the study of these fascinating animals. Under such conditions, a pupil will even take a second look—a condition seldom duplicated in the field, especially if the subject happens to be a snake.

With a reasonably small investment and with a minimum of space required, the biology teacher may intersperse the study of plant and animal groups throughout the course and thus keep the pupil close to the field. Mammals, fishes, insects, spiders and countless other forms of animal life may be observed in their native haunts and in natural color through the medium of Kodachromes.

Plant subjects are equally valuable and interesting. Few pupils in the city have opportunity to see the varied wildflowers of the field and woodland. In the interest of conservation, they should not be encouraged to bring them to the laboratory. But with Kodachromes and filmstrips, there is no such necessity.

Visual aids are extremely valuable in the teaching of still another phase of biology. The relation of life forms to physical factors of the environment and environmental influences upon the distribution of life become much more meaningful when supplemented with slides and films. In his study of environment, the pupil may explore the life of the desert, the Pacific forests, the Everglades and other interesting regions. These experiences are both rich and broadening from both the scientific and the cultural points of view.

As the program of visual aids becomes more extensive in the teaching of biology, life science will take on new meaning. Kodachrome slides, filmstrips and sound films will bring nature to the classroom where pupils may observe life as they will find it in the laboratory of the out-of-doors.   ✪ ✪ ✪

We frequently hear and we volubly agree, "Classroom movies are not for mere entertainment!" In fact, the last time we heard it, we even went so far as to think, "And the next movie I have in class will be educational." We knew that the pupils should be prepared for it beforehand and should be tested on it afterwards, but, frankly, the whole thing remained in the realm of the possible, the probable, yes—in the realm of the abstract. Then we saw an artist perform, and we now have ideas in place of verbalisms.

A Demonstration Lesson

By
KATHARINE DRESDEN
Audio-Visual Guide, Vol. 15, No. 6. Feb., 1949. Pp. 7-8.

Helen Smeltzer of Pittsburgh High School in California is one of 46 teachers in 16 high schools in California whose project is recorded in "Better Teaching Through the Use of Current Materials."[1] Under the name of The California Council on Improvement of Instruction (CCII), the group have remained organized since 1946 so that they may interchange experiences in their exploration of the use of current materials in improving instruction. Each individual in the group works in his own field, be it English, science, or social studies, through the medium of his own choice, be it radio, movie, magazines, field trips. Periodically the members meet to compare notes. They prepare a Newsletter, which is circulated fortnightly. Their annual report is a compendium of their activities.

Mrs. Smeltzer was concerned with using movies in a science class. How can they best be used? Can they help slow learners? Let us visit her class to see what evolved from her study and practice.

A TYPICAL CLASS

The door bursts open, and in they come, thirty-five typical outdoor California youngsters — sophomores; some too big, some too little; serious, alert, earnest, mischievous; arm-in-arm, poking each other, making eyes at each other; expensive sweaters, frayed blouses, and saddle shoes; a typical motley crew of California fifteen-year-olds.

A peep in the record book shows the age spread is from 13 to 17 years. The I.Q.'s run from 65 to 124. Reading grades are as low as fifth, as high as college. Correlations are in line with expectation, pupils with high reading scores and high I.Q.'s ranking high in school grades.

But let us watch the class assemble. Mrs. Smeltzer moves easily among them, stopping to chat here, admonish there, show a pupil an article in a maga-

1. Reginald Bell and Lucien Kinney. *Better Teaching Through the Use of Current Materials.* Stanford University Press, 1947.

zine, join a little group around the bulletin board, casually pause with those who are examining a pile of teeth lying on the table. Charts, diagrams, advertisements, and pictures of teeth, toothbrushes, and dentifrices are posted on the bulletin board and Mrs. Smeltzer is pointing out articles on teeth in the magazines which lie on one table. Meanwhile one pupil secretary checks the roll and another secretary passes out notebooks. When Mrs. Smeltzer starts adjusting the projector at the back of the room, others draw the blinds, put up the screen, switch on the lights.

Now Mrs. Smeltzer says a few words about the movie[2] which is to be shown — not enough to take the edge off it, not enough to give the overgrown boys a chance to become restless or the immature girls a chance to get giggly. But enough to prepare them for what they are going to see — a film about teeth, a film with many new words in it, so many and so technical that it is best to watch and listen first and then talk about it and take notes.

Mrs. Smeltzer runs the projector herself. It is very important in this case that every pupil give full attention to the screen and amplifier. Half the picture is shown, the machine stopped, lights switched on. The going has been tough, the terms pretty technical and new to the group. Release from the intensity of their watching and listening is gained by a few minutes of free conversation — Bill commenting to George, Susie asking Marilyn, Bud watching the back of his head; Allen, biggest and dullest, obviously distraught by the enormity of his ignorance. Not a movement escaped Mrs. Smeltzer; she knew that Bill was telling George a scientific fact he had found in a book; she knew Susie wanted to know if Marilyn liked the movie. She knew how Allen felt, so she said the room was warm and asked Allen to open the window. Here was something Allen could do. He opened the window so that Mrs. Smeltzer could have him close it when he next needed his ego restored.

The Film Is Shown Again

All this took only a minute or two, and then came the suggestion that they see the film again. "What shall we see first?" "Watch for it, and as soon as we have seen it, I will stop the machine and you can record it." So the movie was begun again, and when the first topic was finished, the machine was stopped. Together the class decided what should be remembered, then wrote it in their notebooks. Mrs. Smeltzer wrote hard or new words on the board. She moved about, cautioning about legibility, suggesting that spelling be compared with the words on the board. Peter helped Allen, who sat next to him. Ruth kept an eye on Mabel's book. Alice made her entry quickly and started to read in one of the

magazines. The room was darkened, another section of the film was run, and the exercise repeated.

Bit by bit the film was studied just as the text is studied: pre-reading, analyzing, note-taking. And at the end, a review; the film was again viewed in its entirety.

A few minutes remained. Some questions were asked and answered by classmates, but the effect of acid on the teeth remained in doubt. "Let's try an experiment." "How would we go about it?" "Let's put one of these teeth in some acid." "Hydrochloric acid" — John was throwing his weight around. Mrs. Smeltzer was not awed; she knew John, knew what he was doing, and handled him herself. "John, you know what hydrochloric acid would do to those teeth — we want a practical suggestion." "Oh," said Inez, "lemon juice — may I see if the cooking room has a lemon?" The lemon was procured, the experiment set up, and expectation prevailed.

Others were examing the teeth again, but in quite a different fashion from the idle, pointless examination of the beginning of the period. The group around the bulletin board were showing each other particular items of interest. The magazine browsers were settling down to steady reading. But some were still without occupation.

An Informal Test

Mrs. Smeltzer was still one jump ahead of them. "Why don't you put a diagram of a tooth in your notebook?" Make it like the one the narrator used in the movie; then you will have it for review." Inez continued to squeeze the lemon, Peter and Ruth continued to read. The others drew diagrams of the tooth and labeled them. They did not know they had had a test.

So, you see, all there is to showing a movie is to prepare pupils for what they are to see and then test them on it afterwards. Mrs. Smeltzer had previewed the movie and had prepared her showing with this particular class in mind. She left nothing to chance, nothing to the inspiration of the moment. She had every minute planned full, full for every quick learner and full for every dullard. No pupil was so bright or so well informed that there wasn't a challenge to him, nor was he permitted to be bored by the simpler presentations. No pupil was so dull that he could not find something within his capacity. The class enjoyed the movie; it was a happy experience, but it was a learning experience.

That's the way Mrs. Smeltzer uses movies in a sophomore science class — no, not *any* sophomore science class, but *this particular* class! True, there are basic principles that she would use in showing any movie to any class, but by and large this showing was tailored to fit. ⊙ ⊙ ⊙

2. "Our Teeth" (Encyclopaedia Britannica Films, Inc.)

One of the reasons why the physical educator may usually enjoy rapid success in his teaching is that the method he employs is one that makes for the student's early understanding of the performance which is to be learned. The usual procedure is one of action which permits the learner to get "the feel"

Practical Applications of A-V Aids In Your Physical Education Class

By
ERNEST J. GERSHON
See and Hear, Vol. 5, No.
3. Nov., 1949. Pp. 20-21.

of what he is trying to do. The skills that the learner needs are readily apparent to him, and the methods used to attain them bear very close relationship to the situation which demands their use. The very nature of physical education activities is abundant with those "direct-purposeful experiences" which provide the most desirable conditions for learning.

MANY TYPES OF AIDS

Add to these direct experiences the examples afforded by good demontrations, the utilization of the many and varied visual stimuli such as films, filmstrips, slides and graphs, the accurate word-pictures of the physical education instructor and there will be provided maximal conditions for the acquiring of motor skills, techniques, knowledge, understanding, and attitudes in the physical education program of studies.

With the mention of supplementary films and filmstrips to the teaching of physical education activities, the question might well be asked, "What facilities are necessary to maintain an adequate program which will insure learning through the whole range of physical abilities existent in any class situation?"

FILMS HELP US TEACH

If we mean by "facilities" what the dictionary defines as "things which promote the ease of any action, operation, of course of conduct," the following items might receive some consideration.

Assuming that adequate motivation is present as a result of actual participation or of vicarious experience such as watching others perform, viewing motion pictures of performances, or of adequate word-pictures, the most immediate task of the teacher is to assist the learner to understand what he is expected to accomplish. Demonstration of the soccer kick may be aided by good stop-action photographs and by 16mm sound motion pictures. The still photograph assists the student to note the body attitude during a particular important part of the performance while the motion pictures give him a sense of the ballistic movements involved.

Still pictures can take the form of snapshots, filmstrips, or projection slides which provide excellent opportunities for individual and group study. Searches through periodicals and newspapers often yield many stills of value for teaching purposes. Such stills make good materials for use in the opaque projector as well as for bulletin board display.

Even motion pictures can be made quite inexpensively by the teacher or some interested student. School camera clubs are usually eager for opportunities to use their skills in photographic projects of this type.

CONTINUOUS "LOOP" FILMS

One very effective use of the locally produced motion picture is that of the *continuous "loop" film*. A section of the film which demonstrates a particular skill to be learned is selected and removed from the whole. The ends of this section are then cemented together to form a continuous loop. After this section is threaded in the projector, it can be shown continuously in some corner of the gymnasium for use by the entire class or by individuals and small groups who may be working on the skill as a part of their class study. The gymnasium need not be darkened for this projection of materials. Some shaded portion of the area will prove quite satisfactory. If the gymnasium is very bright, a convenient shadow-box screen can be constructed from a cardboard carton. Merely project the image into the carton which rests on its side upon the table. A white sheet of paper inside the carton provides an excellent projection surface. Commercially produced shadow-box screens are also available to suit almost any situation.

USE THE "ACTION VIEWER"

Another good facility for the detailed study of motion pictures is the "action viewer." This is a hand-operated device which enables the user to send the film through the miniature projector at any speed he chooses for analysis and study. These viewers are usually parts of editing kits and include sets of rewinds and splicing equipment.

Movies and snapshots taken of the students after a period of training will help them to evaluate their performances and to compare their progress with that of others. Records of test scores may be scaled and posted in chart form for consultation and comparison on the gymnasium tackboard. Action photos, newspaper clippings, and diagrams may form a display to stimulate interest and to inspire accomplishment.

For other physical education studies in the gymnasium where music and audible voice directions are very necessary as in the teaching of rhythms, various

kinds of dancing, body-building activities, marching, and allied activities, it is desirable to provide for a public address system which can also accommodate turntables for the playing of recordings and transscriptions.

Cost Need Not Deter You

These, then, are some of the facilities for use of audio-visual aids in the conduct of physical education activities. They need not be expensive. Many of the materials can be produced locally by amateurs under the guidance of the teacher who knows what he wants in the way of instructional aids.

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It is the practice among many secondary school teachers to compel students to take notes during the showing of films. The purpose of this requirement is two-fold. First, it is supposed to keep the student attentive and alert; second, it aids in maintaining order. It is the writer's contention that compelling students to take notes does not achieve these objectives, but more than that, it is distracting to the student. Good note making is a skill which too few high school students are trained to do under good conditions, let alone in a poorly lighted room and during the showing of a film which moves forward rapidly both as to pictures and commentary.

Is Note Taking When Viewing Motion Pictures Effective in High School Science

By
W. E. FORD, JR.
Education, Vol. 68, No. 2.
Oct., 1947. Pp. 125-127.

The writer set about to test the above-mentioned contention. An A-9 general science class at Van Nuys High School consisting of thirty students was selected for the test. This group was rather uniform as to age and I.Q.

Three science films dealing with topics suitable to the general grade level were selected. All were sound black-and-write films of eleven minute duration. After previewing them the writer prepared a list of ten questions on each film.

The first film entitled *The Eyes and Their Care* was shown without warning and with no preconditioning. The second film, *Geologic Work of Ice,* was also shown without preconditioning, but the students were told to take notes during the showing with the idea that they would be used to refer to during the test to follow. This was a duplication of the common practice.

The third procedure was as nearly ideal as conditions at Van Nuys High School would permit. The film selected was *How the Ear Functions.* About two days before the showing, the students were given references to look up. Immediately before the showing a large model of the human ear was brought before the class and its parts were carefully discussed. The students were encouraged to ask all the questions they wished. Guided by student suggestions and the writer's knowledge of the film, a list of the things to look for in the film was written on the blackboard. It was suggested that the students not take notes but instead, watch the screen closely. Immediately upon completion of the film showing the students were given a test. . .

Results

Following are the average scores made by the group:

	Average Points
Test 1 (no preparation given before showing)	30.2
Test 2 (note taking required during showing)	18.8....
Test 3 (thorough preparation given before showing)	39.5

These scores show clearly that when the class was required to take notes during the film presentation, they made the lowest score — and the differences are substantial. The average score on Test 2 was only half as high as that on Test 3. When the group was shown the film without previous preparation and without the note taking requirement, they scored 11.4 points higher than they did when they were required to take notes.

In comparing the distribution of the scores, it was interesting to note that 18 students made scores lower than 30.5 points in Test 2, whereas only 12 students made scores lower in Test 1, and 3 students made scores lower than 30.5 in Test 3.

An examination of the notes which the pupils took during the second film shown indicated a direct relationship between their scholarship standing in the class and the quality of the notes. The scores made by many of the students of low scholastic standing in the test following the second film indicate that students of low scholastic standing are particularly handicapped when asked to take notes during a film projection. However, the notes turned in by all members of the class were not of calibre to be of much value to them.

The writer is well aware that this study is not consclusive. Variations in difficulty of film content and in tests have to be considered in interpreting the data. Perhaps more studies will enable us to develop working principles which will result in the more effective utilization of film material in high school science teaching.

Conclusions:

1. The results of the three tests show that the taking of notes during the showing of a film distracts students from concentrating on the key ideas and in making generalizations.

2. Students when properly conditioned and prepared to look for definite things in the film not only learn more from what they see, but are less apt to become discipline problems.

3. The writer would make the following suggestions for showing science films to high school students:

a. Preview the film.

b. Suggest outside reading or other material on the film subject a day or two before the showing.

c. Just before showing the film, present models, charts, maps, or give short demonstrations. Allow students to ask questions. If necessary, put a brief outline on the board. Finally, just before picture is screened remind them that they will be tested shortly after the showing.

d. During the showing it may be necessary to make a comment occasionally to point out something to look for. Keep interruptions at a minimum.

e. After the showing there should be a brief discussion followed by a test.

f. Look for expressed interests which may serve to motivate new projects or fields of study.

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The inherent nature of industrial education is harmoniously integrated with audio-visual education. The skills of the various trade fields are inevitably taught from the fundamentals upon which audio-visual education rests.

Industrial Teacher Training and Audio-Visual Education

By
MELVIN L. BARLOW

Students in industrial classes seldom catch the school disease of *verbalism* in the shop.[1]

It is not uncommon for the student to spend his first day in the school shop working with real machines, real tools and real materials, and to show progress in the construction of a useful article. Student participation is preceded by teacher demonstration. It is almost as if there were no other way. Suppose that a machine shop student wishes to make a hand punch. To do this he must learn to center drill. This skill cannot be acquired from the textbook or class discussion. It is logical therefore that the instruction take place at a machine, usually a lathe or drill press. For the shop instructor, the demonstration-application procedure is doing what comes naturally.

The starting point in industrial teaching is, therefore, closely associated with the optimum conditions for visual sensory experiences. The motivating forces of industrial teaching are stored up, somewhat like potential energy, in the machines, tools and materials of the school shop. When such forces are released by the instructor they kindle the fires of interest and enthusiasm and sweep the student into the stream of productive achievement.

The industrial instructor does not, like many instructors, make a start from zero in teaching aids. He starts with the most important of all instructional devices — the real thing. The next steps are relatively simple. The industrial teacher draws upon his broad experience as a craftsman to isolate those skills or operations related to the job that make the difference between success and mediocrity in shop work. He sometimes calls these items the *key points* of the job. Without a thorough understanding of those *musts* the learner can achieve only a minimum of understanding, appreciation and skill. It is in this area that supplementary audio-visual devices become important factors in learning. . .

The vocational industrial instructor whose teaching experience extended through national defense and war production training became accustomed to a wealth of industrial films. He used these in the training of the industrial army, and he became aware of the claims of shortened instructional time and the approach to permanent learning. Furthermore, he began to think of visual aids and motion pictures as synonymous terms. However, "in the main, most shop teachers are restricted to working with other types of visual aids, namely those which can be constructed within the shop."[2] Such common types of visual aids are extremely effective and meet the requirement of added emphasis at the difficult levels of shop teaching.

With these favorable conditions existing in industrial teaching, what audio-visual problems arise in the training of industrial teachers?

AUDIO-VISUAL PROBLEMS ARE . . .

First, industrial teachers, like many other instructors, have not had specific instruction in using audio-visual devices. This results in a lack of appreciation of the field and the values to be obtained. Second, very little information has filtered down to the shop instructor on methods of constructing the simple visual devices. Third, the necessary equipment for using visual devices is either not available

1. Edgar Dale, *Audio-Visual Methods in Teaching*, (New York, The Dryden Press, 1946), p. 16.
2. Gilbert G. Weaver, "Practical Hints on the Use of Common Types of Visual Aids in School Shop Instruction," *Vocational Instructors School Shop Handbook*, Visual Aids Issues, No. 2, Fall, 1945, p. 495.

or is available under inadequate conditions. In some cases the availability of the equipment is unknown. A fourth obstacle commonly noted is that the instructor does not have complete knowledge of how to obtain information for his specific field of teaching. Training in audio-visual education for industrial teachers is, then, concerned with an attempted solution of the four problems mentioned above.

The instructor begins his study in audio-visual education by first determining what machines are available for his use in his local school district. He determines also the frequency with which the machines are available for his use. Is it possible for the instructor to have the motion picture projector once a day, week, month? How much time can he expect to use the slide film projector, the slide projector, the opaque projector? Such a survey forms a framework upon which the instructor may plan his audio-visual projects.

Although the instructor is expected to study audio-visual devices beyond the availability in his particular case, he starts his study in terms of those devices within his reach. The instructor is reminded constantly that good instruction is usually the result of good planning, and that learning may be improved by an audio-visual approach. However, even with the best equipment available and an abundant supply of films, charts, or slides a poor plan of instruction does not automatically become better. The industrial instructor must determine, usually by a job or operation analysis, what items of instruction should be visualized. He locates those items that are hard to learn or hard to teach. He must find the areas where the student fumbles, progresses slowly, or even fails to absorb the instruction. Once the obstacle is determined, a plan can be devised to supplement the instruction over and beyond that required for less difficult material, since even the simplest of visual means may be a key to an understanding of a difficult situation.

HANDMADE AIDS

In training the instructor receives actual work experience in preparing visual aids. Such aids as blackboard drawings and blackboard stencils, when thoroughly understood, become extremely useful as teaching aids. The many varieties of handmade slides may open an avenue of instruction previously unknown to the instructor. As the instructor develops skill and understanding by laboratory experience in the preparation of slides, he also develops a sense of values. He finds that certain types of slides have more importance under one set of conditions than under other conditions. The value of some degree of skill in the preparation of slides becomes apparent when the instructor finds that a poorly prepared slide does not improve upon being magnified twenty or thirty times.

The preparation of handmade charts to picture a shop problem or principle and charts to illustrate shop safety have been found to be most useful. A small drawing is enlarged to the proper size by the use of an opaque lantern, and traced on bristol board. The drawing is then completed using show card paint. It is not uncommon for an instructor to want to prepare a series of safety posters to use throughout the school year in his continuous campaign toward shop safety. Again a certain degree of skill is helpful. Even though an instructor may assert that he is not an artist, experience shows that he has more talent than he thought.

The training of the instructor is not complete without some experience in making drawings on stencils or the master sheets of the various duplicating processes. Instruction sheets are measurably improved when appropriate diagrams are included. There are many experienced instructors in teacher training who have never prepared a stencil or master copy for duplication. The lack of interest shown in this phase of the audio-visual teacher training is almost unbelievable.

Instruction in the use of the various machines, threading of the motion picture projector for example, is carried on simultaneously with the laboratory work. Specially prepared job sheets are available for instructors having no previous experience in the use of motion picture projectors.

A very important phase of teacher training is concerned with the availability of all types of visual aids. Many charts, diagrams, motion pictures, models, maps and other devices are available from commercial concerns. Locating such materials is a part of the instructor's training. Large equipment and tool manufacturers have separate educational departments whose major function is to prepare and supply information of this nature. . .

One of the important phases of audio-visual instruction for industrial teachers is concerned with the use of the audio-visual devices in practice teaching. Instructors prepare teaching plans involving one or more of the audio-visual aids and actually teach the lesson to the rest of the group. Criticism and analysis of the lesson are effective reminders of the strong and weak points of the teaching process. When the practice demonstration can be recorded, the instructor may have a further check on the quality of his voice and method of delivery. . .

The writer recently conducted a course in audio-visual education designed especially for instructors of trade and industrial subjects. During the first days of instruction it was noted that two of the stu-

dent instructors showed very little interest in the suggested program of work. However, as the course progressed, the same two teachers became completely absorbed in the work of the visual aids laboratory. The writer's curiosity led him to propose a written assignment which might reveal the sudden transformation. The following is quoted directly from these papers:

"There are many things in my shop that were prepared by other instructors. Although I admired their work, I was reluctant to continue it for fear of not being able to to measure up to their standards. The fact that I made my own charts (the first ones I ever made) and cut my own stencils makes me feel that I have a better control of the situation than ever before."

"As a result of my experience in making a blackboard stencil, glass slides, mimeograph and hectograph sheets I will now be able to portray realistically, in a matter of minutes, content that has been more or less abstract and which has taken too long a time in explaining. It is hard to get the motion picture projector in my school and most of the time it doesn't work. I have learned that I can use other aids that will add color to jobs that seem menial and routine."

Laboratory Experience Necessary

Certainly laboratory experience in constructing and using the various common visual aids should be a part of successful industrial teacher training.

In the final analysis it is essential to examine critically the choice of each visual device. Hit or miss methods of selection seldom result in the best usage of audio-visual aids. When the instructor can successfully defend his selection in terms of need and expected outcomes, however, the device selected may be given the final test of actual use in the class room. . .

The laboratory work to be described considers, in the following order, the blackboard, slides, charts, graphs, maps, diagrams, duplicated instructional materials, slide films and motion pictures. This arrangement is based on the assumption that where the industrial instructor has acquired a limited knowledge of audio-visual aids, this knowledge is most frequently concerned with slide films and motion pictures. Quite probably this is due to the wide publicity given to these types of audio-visual aids.

In the first unit dealing with the blackboard, the course syllabus contains a brief resumé of this aid and then presents a job sheet on *How to Make a Blackboard Stencil.*

Trade instructors frequently find it necessary to prepare large, complicated drawings of machine parts or of processes concerning some phase of their trade. Such drawings require a considerable amount of time to prepare, and in some cases the vocational industrial instructor is unable to use any other visual aid.

If a stencil is prepared for the particular drawing, the time of reproducing the drawing is materially reduced. The stencil may be saved and used from time to time as occasion demands. The blackboard drawings are usually completed with colored chalk which emphasize the essential features of the drawing and aids the learning process.

When the stencil is finished the drawing is completed on the blackboard and evaluated as a teaching aid by the instructor and other members of the class. This is usually demonstrated by asking the industrial instructor to teach a lesson to the class involving his blackboard drawing.

The unit on slides contains a resumé of this aid, points out some of the brief characteristics and lists the most common types of slides. The job sheet *How to Make a Typewritten Slide* contains the following information:

"The typewritten slide is sometimes known as a typewritten cellophane slide since cellophane is used as the carrier for the typewritten words. Either white or amber colored cellophane may be used, and either black or red carbon paper. . .

"Do not crowd the work on the slide. Attempt to limit the number of words to sixty or eighty. Badly proportioned work may defeat the purpose of the slide."

The etched glass slide, because of its ease of preparation, offers a wide range for development of visual materials for the trade instructor.

The slides may be prepared for temporary use, cleaned and then re-used. Figures and drawings to be saved for re-use may be bound in the regular manner and kept as permanent slides. . .

When an industrial instructor shows particular interest in slides and the necessary projection equipment is available in his shop, he is given the opportunity to prepare other types of slides. Frequently an instructor will make a dozen or more slides in the laboratory to use in several units of work.

In a similar manner job sheets have been prepared on *How to Make a Chart and How to Cut a Mimeograph Stencil.* It is important to note again that this is primarily a laboratory course and the students have an opportunity for actual work experience. Because of this experience, interest is developed and many instructors have prepared a number of stencil drawings covering critical phases of their courses of study. . .

Assignments for the areas of slidefilms and motion pictures have dealt chiefly with locating all of the available films for a particular trade. A complete library of catalogs and reference books is available for the instructor to use. He records all of the pertinent data for each film. . . When the films can be obtained locally the instructor makes an analysis of the film to determine its suitability as an instructional aid for his course of study.

The most satisfying reward for the industrial teacher trainer is to observe the various paths of interest created in the teacher. The worth of audio-visual education is measured in terms of what the instructor does outside of the class. An industrial electricity instructor prepared an excellent set of charts to visualize the generation of a sine wave. Later he replaced his black and white charts with colored charts. Motion appeared to be a factor so he added a coil of wire which could be revolved to add reality to the chart. This led to the preparation of a model. He retained the coil of wire but added batteries and lights. As the coil of wire is revolved through the magnetic field the lights trace out the generation of the wave. It doesn't take long for his students to grasp the concept involved. He has spent untold hours preparing this visual aid, and all the work merely supplements work with the real thing. The instructor now plans to prepare a model to demonstrate three phase systems.

A cosmetology instructor found that her set of slides visualizing the preparation of a certain type of hair style was not adequate. Some of the steps had been left out. Continuity of action was important for group instruction. The instructor decided to make a short film. With the help of her colleagues in cosmetology she prepared a script. The photography instructor supplied technical advice and assistance in arranging the lighting. A model and operator were selected and after the appropriate rehearsals the film was made. Now with a 100 foot color film, almost totally free of the amateurish tinge, the instructor has developed an adequate aid for group instruction. A difficult but important instructional problem has been solved.

An extremely valuable function of the laboratory work lies in the fact that the laboratory literally never closes. Industrial teachers may visit the laboratory at any time to work out projects involving preparation of audio-visual aids. . .

One of the final laboratory projects consists in attempting to select visual devices of specific teaching assignments. An instructor may select from his trade analysis or course of study those jobs or topics which in his opinion will need special treatment. It is understood that in many instances more than one

visual aid may be required. In short, to paraphrase Herbert Spencer, this is an attempt to determine *What Visual Aid is Most Worth*. This procedure can be evaluated, at the present time, only subjectively. The writer believes, however, that the procedure has value. When four or five machinists sit down together to make a first choice in the selection of a visual aid for a particular job, differences of opinion are frequently noted. Eventually these differences of opinion are reconciled and agreement is reached. One may be assured that by this time all of the elements of the teaching job have been brought to light. Learning has undoubtedly taken place; new concepts and new understandings have entered the teaching job.

In spite of the multitude of teaching aids available the instructor must select his teaching aid with caution. Availability is not necessarily synonymous with the right choice. . . It is difficult to forcast the future of audio-visual education in industrial teacher training, but the prospects look good.

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They're teaching photography in the schools. It may not be a photographic course for credit, as yet, but it's in the school under an old name, the "Camera Club." The transition from the camera club to the photographic course for credit is logical, inevitable, and generally motivated by necessity.

To Teach or Not to Teach Photography?

By HANS E. LANTZSCH
Audio-Visual Guide, Vol. 18, No. 6. Feb., 1952. Pp. 28-29.

The basic question to ask is this: "Why offer photography courses in the schools?" If you, the reader, are a photographer, professional or amateur, you probably have already formed an opinion on the topic. If you are a parent of high-school children, you likely have definite convictions about teaching photography. As a teacher, I have a point of view which may shed some light on the subject. I am not a salesman; photography sold itself a long time ago, for it is a necessity to thousands of trades related to mass media of communication. Thousands of adults practice it for profit and pleasure. In a mass-production era, it has given us opportunities for pride in workmanship and creative expression.

But photography as a curriculum unit — that is different. "Photography is accepted everywhere, but don't bring it into our schools as a classroom subject," is the common attitude. School administrators have always favored after-school activities. They are a way of utilizing the school facilities beyond the school day, of absorbing some of the students' leisure time.

It is generally free time for administrative utilization. Teachers are seldom paid for such activities. Photography is thus generally found in the schools of the United States as an activity of a camera club. Administrators point to it with pride; parents are all for it because it is conducted after school; they know what their youngesters are doing; it is practically free and involves no additional taxes, since there are no salaries paid. Generally, the instructor doesn't mind too much, as he is usually a camera enthusiast and darkroom hobbyist. The only person, it seems, who does object is the instructor's wife, who wonders when he'll be home for dinner.

That is the situation; photography is swell for after-school activities but not for classes. Leave it just as it is, a camera club. A laissex-faire policy towards the camera club sounds easy, but there is more to this type of club than meets the eye.

The ideal way to promote a camera club, if club there must be, is to keep it voluntary. The voluntary aspect substitutes interest for discipline. If good pictures are produced, the photography instructor gets more compliments from parents than the mathematics or science teacher. It's probably unjust, because mathematics and science are so much harder to teach.

PICTURES PROMOTE PUBLIC RELATIONS

When students take pictures for the school, the pictures serve to promote good public relations. The principal, the parents, the superintendent, and the department or class concerned with the activity are always interested in pictures. Students desiring pictures generally can purchase prints at cost price.

As the ability of the participating students increases, so do the demands on them and on the sponsoring teacher. There are usually 20 or more students to one teacher, and although the students rotate picture assignments, the instructor must attend every one of the photographic activities. Attending such activities every afternoon or night of the week can be wearisome.

Having had his picture taken, everyone wants it the next morning at the ringing of the first bell. This, I suspect, is how the photography class came into being from the camera club: an administrator had his picture taken and wanted it immediately. The over-worked teacher was unable to comply. The next semester, the teacher was alloted an hour a day to work on pictures, provided he taught 15 students. The students could help him turn out some of the work.

Evolution ran its course. Photography was listed as a subject. Born of necessity, it was destined to a rocky road. The club that built citizenship and

moulded character at 3:30 P.M.—was now destroying the core of the education program at 10:30 A.M. Criticism was at every turn of the elbow. Photography had to prove its worth and earn its place in the curriculum. Photography is chemistry, physics, mathematics, art, and a smattering of that lost subject, logic. It illustrates principles and facts without verbalism. Physical laws of light are demonstrated by the principles of flash photography. The laws of optics are illustrated by lens and bellows, or tilting backs; certain laws of electricity with the solenoid, or multiple flash. The strobe unit is now used to indicate condensers and their use. Chemical processes are present in all the darkroom procedures —the basic laws of chemical reaction according to temperature; solubility constants; temperature conversions; ionization; oxidation and reduction, to name but a few. Photography is a laboratory course in itself.

Photography is art. It can reveal more about perspective and composition in one day than an art student drawing his own pictures can learn in a semester. It is three dimensions on a plane surface; it is light and shadow and color. It crystallizes the most fleeting impression.

BEGIN WITH 8TH GRADERS

In our school we teach photography to many students, boys and girls, of 13 to 15 years. We teach them before they have had chemistry and physics, before they understand ratio in mathematics or composition in art. We teach them when they are young, so they have very little to unlearn. They are fascinated by it and are receptive to instruction. They learn quickly. By the time they realize what photography is, and how it operates, they are sophomores. Principles they have taken for granted as common occurrences in the darkroom are now presented to them as laws of chemistry and physics. They understand basic facts of science because photography has demonstrated them.

The reason we teach photography in the eighth grade is that by the time our students establish themselves in high school, they have developed a method of doing things and have built self-confidence. They are able to do certain things with a camera and in the darkroom. Another reason for teaching them early is their usefulness to the school. The photography class is a service department. It operates in conjunction with the audio-visual department in supplying instructional aids. It copies pertinent data. It photographs special projects, displays on bulletin boards, step-by-step procedures for doing things, biological specimens, and anything else that is desired photographically.

All this in just one hour a day? Yes, for the program runs itself. The prerequisite is a suitable darkroom, large, airy, and well equipped. Good equipment is mandatory to success and continuing operation.

In learning photographic techniques. our young group requires its own type of text. Since all authors assume that everyone knows what a camera is, that everyone has had trigonometry and understands sensitivity curves and the gray scale, we were forced to compose our own text. It is a simple laboratory manual which is divided into sections for the darkroom and for using the camera.

For the first semester, all cameras are box cameras, and we teach only sound photographic principles that can clearly be illustrated: sunlight in relation to the subject; camera movement; subject movement; development; contact printing; enlarging; types of cameras; and photographic merchandising.

Any profit earned by students in selling school pictures is spent on new equipment purchased from various manufacturers. The instructor never discloses which is the better equipment, but allows the user to decide for himself. It is our students themselves who make our program a success, for their honesty and integrity have been beyond reproach. Their willingness to complete a job and do it well is gratifying, to say the least.

The students are critical, too. They resent not being able to get sample materials for educational purposes; they want easier booklets on photography and use of equipment, and they want standardization of photographic terms.

Yes, we're teaching photography in our school. Does anyone know if developer and hypo are habit forming? We seem to be under their spell.

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To move a group of students to a special room or to combine class groups for the purpose of viewing a projected visual aid suggests to students that this type of teaching aid is abnormal. It is important that students be conditioned to the fact that the use of a film or a slide series in the classroom is an essential part of the class activity and will contribute understandings and attitudes that could not be brought to them in any other way. Hence, the audio-visual program must be designed on an extremely mobile basis.

Putting the Audio-Visual Progam on Wheels

By
SAM S. BLANC
The Nation's Schools. Vol. 46, No. 1. Jan., 1950. Pp. 60-62.

Each room in the building at East High School, Denver, is equipped with one or more electrical outlets, and more than half of the rooms are equipped with permanently mounted dark shades. In rooms not so equipped portable dark shades can be put over the windows in a few minutes. The audio-visual equipment is mounted on trucks that can be taken rapidly from one room to the next. Fortunately, the building has an elevator, which makes the movement of equipment from one floor to the next a relatively simple matter. Were it not for this fact, the use of equipment at East High School could not be nearly so effective as it is at present. Since there are four floors in the building, an attempt to carry equipment from floor to floor would be highly impractical.

MOBILE UNITS

The carts used for the motion picture projectors were specially built for the school by a local manufacturer. The frames are of seamless airplane tubing, and the tops are of five-ply wood. Casters are ball-bearing, rubber tired, and fixed in front, with swivels on the back. The carts are light, strong and maneuverable, and form stable platforms when the machines are in use. The projectors are fastened by means of a yoke arrangement to the top of the carts so that the machines may be elevated but cannot accidentally be knocked off the carts.

The speakers, in the two-case models, are fastened permanently to the under side of the top of the carts. The recommendations for placing the speaker indicate that it should be near the screen at the front of the room. However, extensive tests were conducted in the classrooms to determine what acoustical differences there would be if the speakers were mounted on the carts. As nearly as could be determined, there were no great differences in the ease of hearing or in the tonal qualities.

We found that in the typical classroom, where there has been no acoustical treatment of the walls or ceiling, placing the speaker toward the rear of the room at the students' ear-level seems to give excellent results. The student assistants can wheel the cart into a room, place it in position, plug in the cord, erect the tripod screen in the front of the room, and pull down the dark shades over the windows, all within the five-minute interval between classes.

The equipment available for use in the classrooms includes five motion picture projectors, of which four are scheduled for use and one is kept in reserve in case of emergency. When a projector has to be repaired, the spare one is put into use. This avoids loss of time in use and enables the daily flow of equipment to proceed without delay.

Each of the five projectors is mounted permanently on a cart. Two additional carts are available

for use with the 3¼ by 4 inch, the 2 by 2 inch, the filmstrip, and the opaque projectors. Audio equipment, consisting of a tape recorder, a transcription player, a disk recorder, record players, and radio-phonographs, is moved on two carry-all carts, built in the school shops, and on a converted library cart. All the carts have built-in extension cords so that the equipment need not be removed from the cart to be used anywhere in the classroom. The equipment is rolled into the room, is plugged into the electrical outlet, and is ready for use.

System Needed

To expedite the mobility of the program, it is necessary to have an accurate booking and assignment system. The scheduling of machines and the procuring of the audio-visual aids must be done on a detailed, coordinated basis. And to be sure that the activities scheduled move smoothly, constant supervision on the part of the person in charge is necessary. It is not possible for the person in charge to know how the program is operating in the classrooms if he does not leave his office at any time.

To make possible the proper integration of bookings and scheduling of equipment, it is necessary to plan the major share of audio-visual uses well in advance. This enables the person in charge to set up the "book" and to have the program ready to operate at the beginning of each semester. Of course, this does not preclude "spot bookings" during the course of the semester as specific needs arise in classes, but the bulk of the audio-visual materials is scheduled before each semester begins. As each request for audio or visual aids is confirmed by the booking source, the class schedule for that particular aid is placed in the "book."

From these booking sheets the daily assignments for the visual aids assistants are made. Three assistants are assigned to the visual aids office each period of the day. The assignment sheet is posted every morning in the visual aids office, where all the assistants report before school starts and sign up for one or more of the activities scheduled during their period. They then become responsible for delivering and setting up the proper equipment and materials at the beginning of the period and for moving or returning the equipment and materials at the end of the period. They also are on duty during the period they are assigned to the visual aids office in case there is a breakdown or other emergency. Since the person in charge has a teaching load in addition to the coordination of the audio-visual program, the use of assistants is necessary. . .

Three visual aids assistants can handle as many as six or seven different activities during a single class period because of the method of operation of

equipment in the classroom. Students are trained (or "checked-out" if they have had previous training) at the beginning of a semester to operate a particular piece of equipment. The training is given during study hall periods so as not to interfere with class work. Student operators who qualify are issued cards designating the type of equipment they are competent to operate.

When the equipment has been delivered and set up in the classroom, the visual aids assistant returns to the visual aids office. Two student operators, who are members of that class, then operate the equipment under the teacher's direction. This method has been found to give excellent results in spite of the large number of people who handle the equipment. It is estimated that at present there are approximately 300 student operators qualified to handle the equipment at East High School. Yet, aside from the routine replacing of lamps, changing of needles, and splicing of film, few operational difficulties have been encountered.

Cooperation Essential

Of course, the program does not operate on its own volition. The whole-hearted cooperation of the administrative staff and of the faculty in planning each semester's program is essential. The person in charge must have sufficient time to coordinate and supervise the activities; to see that the visual aids assistants carry out their assigned duties, and to maintain the equipment in good operating condition.

However, if the object is to have a flexible, well coordinated audio-visual program that contributes to the learnings, understandings and attitudes of the students in each classroom in the school the investment of time and effort pays off.

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One of the most difficult problems connected with the modern trend to decentralize audio-visual aids and to use individual classrooms for all types of projection and display purposes is that it takes many people to handle the equipment and material in such a way as to obtain maximum use of the total investment. By means of a student audio-visual club, a group of helpers is made available for carrying out this program. At the same time the students get valuable practical experience.

Let Your Students Help You

By
HENRY W. SYER
and
PIERCE J. FITZGERALD
Audio-Visual Guide. Vol. 16, No. 7. Mar., 1950. Pp. 15-16.

In order to discover trends in the organization and procedures of such clubs in large school systems, we sent a questionnaire to superintendents of schools in

the 191 cities in the United States having populations of 50,000 or over. Replies from 156 cities came in time to be included in the tabulations. Eighteen of those replying had no audio-visual departments. Of the 138 that did, 118 had student audio-visual clubs. Among the remaining departments, student help was used with no attempt to organize the students in any formal way.

The questionnaire asked for the major activities of these clubs. By far the most common was "operating projected aids," which was reported as an activity of all 118. Other activities included: circulating mounted pictures (reported for 37 clubs); operating public-address systems (20 clubs); supervising camera clubs (22); library research (15); supervising corridor bulletin boards (13); recording programs for school use (11); supplying classroom bulletin boards with material (8); servicing classrooms and auditoriums with records (8); servicing stage auditoriums (6); activities connected with stadium, publicity, museum displays, and field trips (each reported by one club).

In answer to a question about minor club activities, 116 reported "running equipment;" 111 reported "setting up equipment;" 104, rewinding films; 101, splicing films; 97, delivering equipment; 86, delivering material; 84, demonstrating equipment to students; 82, collecting material from rooms; 80, demonstrating equipment to teachers; 66, keeping records of rooms and materials; 65, inspecting films; 64, errands in school; 59, making assignments to club members; 52, keeping attendance of club members; 52, repairing machines; 52, ordering material from central library; 43, errands outside of school; 41, visiting rooms to check desired material; 40, making material for projection; 34, evaluating films; 6, repairing furniture; 3, building models.

In general, students are not being allowed to participate in any serious way in the repair program. Functions reported in this category, in the order of their prevalence, include: cleaning lenses (reported by 100 clubs), replacing lamps, oiling motors, replacing spring belts, replacing fuses, replacing tubes, examining for defects, replacing leather belts, repairing cords and plugs, general overhauling, repairing playbacks. Only 5% of the clubs are allowing the students to do more than give the machines perfunctory check-ups.

Production activities are engaged in by only half the clubs, with 59 reporting the making of wire recordings; 42, glass slides; 9, mounted pictures; 37, 2"x2" slides; 36, disc recordings; 29, motion pictures; 18, filmstrips. Teachers are allowed to take recording machines home to make recordings for school use in 33 of the schools, and in 10 of them students are allowed to do so.

In answer to the question, "For what types of occasions are members available?" 117 reported "regular classes;" 106, assemblies; 102, school club meetings; 92, parent-teacher meetings; 63, night-school programs; 59, civic clubs (night). Eight reported that the students were paid for civic programs; 2 reported pay for night-school programs; and one for parent-teacher meetings.

Another question inquired how members were chosen for these clubs. The majority select them from volunteers, restricting their selection to keep about one third of the members in the ninth and tenth grades. Other factors reported as influencing selection of members, in order of prevalence, with many clubs reporting a combination, are as follows: "on a selective basis," limited number in club, scholastic standing considered, waiting list, recommended by home-room teacher, recommended by the counselor, problem students accepted, mechanical ability test, limited number per grade recommended by former members. One school reported a club composed of students who had been academic failures.

Conclusions drawn from the most outstanding organizations show that in most cases, after the first group of students have been trained, they in turn become the teachers of the newer members. The teacher in charge usually gives the final test. In a well-organized department, the first two months of the year and the final two months are the busiest for the coordinator, and thus he has little free time to train students directly during these periods. Only 27% of the clubs advance their students by tests. Only two schools reporting had a regular class-period training program for members prior to their initiation as apprentices. The best training programs existed in those systems where the coordinator had one or two assistants to help with the program.

Names used most frequently to designate ranks of students in these clubs are as follows: regular operator (reported by 44); assistant operator (28); chief operator (19); senior operator (17); apprentice, (15); trainee (11); repair chief (6); projectionist (5); specialist (4).

Only 20 of the 118 schools reporting give academic credit for service in these audio-visual clubs, but 3 others are planning to give such credit. Six give credit toward a minor school letter and 3 give credit oward a service award (a certificate awarded at graduation).

A question regarding methods of assigning jobs to club members revealed that in 54 schools they receive assignments only for their study periods. In 49 schools the members serve when they are in a class which is using the aid. Forty-three schools assign one student per activity; 38 assign two mem-

bers per activity; and 13, more than two. As to procedure for notifying them of their assignments: in 29 of the schools club members report to the office each day for oral assignment; in 23, they report each day for written assignment; in 36 schools, members check their assignments each day on the office bulletin board; in 35, they are notified by note before the day of assignment, and in 27 they are notified by note on the day of assignment.

In 64 clubs, officers are elected by the members; in 14 they are appointed by coordinators; in 12, the offices are earned by seniority, in 8 by point record, in 5 clubs officers are recommended by the faculty, and in one by "demonstrated ability."

Do the members have any identification? They have corridor passes in 45 schools; buttons or pins in 13; "job sheets" in 11; a note from the office for each assignment in 6; "operator cards" as passes in another 6; arm badges in 3 schools. Five schools reported that club members wear identification all day, and one that they wear it only during assignment.

In 48 schools, members may be removed from the club on the complaint of any teacher; in 37, for violation of particular club rules; in 11 for failure in scholastic achievement; in 11 at the discretion of the audio-visual director; in 9, by a system of demerits; in 6, by decision of the principal; in 2, by judgment of sponsor; and in one by demotions.

For anyone running an audio-visual club or planning to start one, the variety of activities and suggestions for organizing such clubs reported in this survey should serve as a source of practical ideas.

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Once a radio program goes "off the air," it is usually difficult to borrow and often impossible to keep a transcription of it for use in the classroom. Yet there are many programs worth saving for future school use. Roosevelt School is located in northeastern New Jersey and is within range of two

Saving Radio Programs With Our Tape Recorder

By
HAROLD HAINFELD

stations that broadcast on-school-time programs. WNYE-FM, New York City's Board of Education station, and WBGO-FM, the Newark school station, offer programs of value during each school day. Federal Communications Commission regulations permit schools to make recordings of programs from the air if they are used for educational purposes and not sold as a profit venture.

The use of our tape recorder has enabled us to start our audio library. If a program has enough

merit for classroom listening, it can be saved on magnetic tape for subsequent use as needed.

Having a program recorded on tape offers solutions to other problems in the use of radio in education. Audio-visual administrators advise previewing films before use. Likewise, by having the radio program recorded, the teacher can pre-hear the program before using it in the classroom. If it fails to meet classroom needs, it can easily be erased, so that the tape is available for another recording. A program may be broadcast by New York or Newark at one time, and yet fit into the curricula of other cities at another time. By recording broadcasts for later use, the best programs can be used at the right time, as needed in any classroom.

Excellent help has been given to our young project by the directors of WNYE and WBGO. Administrative approval of our plan resulted in an increased budget for additional spools of magnetic tape.

PROGRAMS RECORDED

During the past year we recorded four series of programs. We experimented with WNYE's series on "Pioneers in Science," "E Pluribus Unum," and "Tales from the Four Winds." We also recorded a series of programs from a commercial station. The experiments proved successful.

The lives of pioneers in science are studied in the junior-high science and health classes. On tape, these programs can be used for many years in the future. The "E" Pluribus Unum" program deals with the basic problems faced by the founders of our Constitution. "Tales from the Four Winds" is an interesting story-telling program for the primary grades. Increased enrollment in the primary grades has been steady. With one radio in a school, it is impossible to have all classes hear the program at once. Having these programs on tape enables all students to hear the program in their own classes and at a time convenient to the classroom teacher.

We edited the "Cavalcade of America" and "Secret Missions" programs that we recorded for use in the classroom. By using a splicer, we eliminated the commercial and other announcements. This cut the running time down from a half-hour to about 23 minutes, giving enough time in the forty-five minute class period for proper introductory and follow-up discussions.

Schools should build up recording libraries of valuable radio programs. College and university courses in the selection and use of audio-visual aids should stress the value of the tape recorder and radio combination, especially when radio courses are not offered. Audio aids are less expensive than projected aids and can do much to enrich the curriculum.

Programs can be preheard by the teacher, used at the proper time, and presented to individual classes rather than heard in the auditorium. Commercial programs can be recorded by teachers at home in the evening for use in school when the curriculum unit requires it.

To the live teacher, the tape recorder presents many challenging opportunities, not the least of which is a solution of the radio problem.

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A few years ago while I was teaching a unit on Stevenson's "Treasure Island" in an eighth grade English class, one of my students brought in a dramatized version of the story which she had recorded on wire at her home the night before. I discovered that only a handful of students had heard the actual broadcast, but with a recording I was able to bring the same program to each of my five classes under virtually the same controlled conditions. The result was a stimulating post-listening discussion in each class, with the last period as fresh and spirited as the early morning group had been.

Your Classroom Can be a Tape Recording Studio

By
FRANK GEORGE
Teaching Tools. Vol. 1, No. 1. 1953. Pp. 30-31, 42-44.

Aside from the individual response that these discussions encouraged, there was another reaction. Several pupils asked if they could record their own dramatization of the story. I agreed. I then suggested that with limited time available for the unit, they might do a short scene — if they read the story outside of class. Rather than attempt to write a script, one of the classes decided to have a round-table discussion of the characters and plot.

Each of the classes produced a five-minute recording, which was subsequently played for the other groups. The programs were ragged and amateurish, to be sure, but that did not diminish interest or effectiveness as motivating devices. Actually, more of the slower students participated actively in production; the faster ones found new creative avenues in script-writing, reading books on radio directing, and the like.

Long Beach, California, is one of the fortunate public school systems owning and operating an educational FM radio station. This, of course, gives added impetus for students to produce radio shows for use with study units or co-curricular activities. But with modern, inexpensive, easy-to-operate recording devices, any classroom can be a recording studio. As a matter of fact, although Long Beach City College has some of the finest radio facilities in the country, we still prefer to use portable tape recorders in some classrooms for certain types of pupil-participation programs.

SOME TYPICAL QUESTIONS

Conversations with many teachers have indicated a general desire to know more about making tape recordings. Here are some typical questions that are asked:

Q—Doesn't recording require a technical knowledge?

A—Certainly not! The average non-professional tape recorder can be, and frequently is, operated by youngsters at home and school. Tape recording is strictly a post-war development in the United States, and several major simplifications and improvements have taken place within the last 18 months. A number of good, inexpensive, light-weight portable machines now on the market will give excellent results in the classroom.

Q—What kind of recording shall I do?

A—Practically speaking, the three basic types of recording devices are disc, wire, and tape. Although disc recorders are still found in some schools, they are used generally for speech correction work. Discs have the advantage of being playable on virtually any turntable; but they are expensive for school use, since they can be recorded only once.

Wire and tape recorders have two big advantages in common: long programs—from 15 minutes to an hour—can be recorded without interruption, and the same wire or tape can be used over and over again without appreciable wear. Tape is generally considered superior to wire for program recording, however, because it gives higher fidelity, is easier to handle, and can be edited; that is, lengthy or objectionable parts can be cut out, new material inserted, and the final spliced tape becomes smoother than the original program. Most radio network shows, by the way, are produced by this method.

Two kinds of tape are available: black oxide and red oxide. The latter is plastic-backed, much more durable, gives better recording quality, and is less expensive to use in the long run.

Q—Our school doesn't have recording facilities. Can I use my classroom?

A—Definitely. Any room can be set up in a few minutes. All you need, even for a dramatic script, is your tape recorder, a record player (preferably one with detached speaker), some music recordings, and some inexpensive manual sound effects, such as horns, bells, cellophane, berryboxes, coconut shells, and others. (Children love to collect and use them!) More difficult sounds are available on sound effects records.

Your recordings will be better if you can minimize the outside noise of autos, airplanes, playing children, and such.

To avoid picking up motor noise, keep the recorder as far as possible from the microphone. The sound effects people should step up toward the mike only on their cue and then get out of the way. If you direct the program standing back in the class, it gives other students a feeling of participation; it also helps prevent "restlessness" among those who may not otherwise be occupied.

Q—What kind of program should I do?

A—It's better to do a simple production well than an elaborate one poorly. The students themselves, while usually eager to do a "Hollywood show," soon become tired and discouraged if the program is long and confusing. In anything but a radio or drama workshop it is usually advisable to begin with a short round-table discussion. Limiting it to ten minutes or less, and recording several groups, allows more students to participate and familiarize themselves with all the equipment. Incidentally, more interest will be sustained if all the groups record first, and then play-back later.

Music classes, of course, provide a natural well of program material. Local radio stations frequently like to fill their public-interest time with programs featuring music students. And in the class itself, the music teacher will find that students are aided immeasurably when they hear their own vocal or instrumental selections. As a matter of fact, the recording device provides just about the only method whereby music groups can listen to themselves in a true audience situation.

Social studies, English, speech, and foreign language classes can make almost constant use of tape recorders, either in classroom study or in the production of programs. Weekly panels and forums stimulate individual pupil research throughout the semester. In the foreign language class, students can record short conversations or readings and listen critically to their own pronunciation and diction.

Q—How do I get a script?

A—You won't need a formal script for much of your recording. You should, however, let the pupils develop some sort of outline so that the recording session doesn't end up in a lot of idle chatter or blank spots. It is a rather strange phenomenon of recording that people who have the most to say while you are setting up the machine frequently are the most dumb-founded when standing before the microphone! For this reason, in order to keep a discussion going, it is always well to have your master of ceremonies prepared with a program outline.

One of the simplest ways of making any kind of program outline is to prepare a "block diagram" of the total time allotted. One way is to make a quick sketch on the blackboard, showing the time allowed for each person or portion of the program; thus at any time during the recording, everyone can tell exactly what comes next.

For future programs, advanced or superior students can be encouraged to create their own individual program outlines or even dramatic scripts. To start them on such projects, give them sample scripts that are either mimeographed or printed in library books. Junior high and highschool pupils will enjoy reading such text material as "Let's Broadcast," by Everett Braun and Frederick Stanley. This kind of enrichment assignment is particularly adapted to English and social studies classes; gifted pupils can work up dramatic scripts in connection with short stories, history units, and so forth.

There are many sources of professional scripts: public library anthologies, radio stations, scriptwriting services, university and college workshops, and national radio advertisers. Most of these scripts are available free of charge for classroom use. However, if you intend to produce a script over your local radio station, be sure to check the copyright.

Q—Is tape recording difficult?

A—Not at all. Just as with driving an automobile, once you understand the basic principles, you can operate almost any machine easily. Assuming you have been instructed in the use of your own school's recorder, here are a few suggestions for making better quality recording:

Be sure that recorder and microphone are not on the same table.

Use a magazine, folded cloth, or other cushion between mike stand and table top. Keep pupils from tapping pencils, drumming fingers on the table, or making other unnecessary noise.

If possible, improvise a mike stand from a sturdy music rack or set the mike on a speaker's stand. As a general rule, students do a better all-around job when standing around a mike, rather than sitting.

Have someone "ride gain"; that is, constantly keep a hand on the recorder volume control so that if voices or sounds are too weak or too strong, an adjustment can be made instantly. Most school recorders have a volume indicator light that will occasionally flash during recording peaks; constant flashing will cause distorted or fuzzy sound, while no flashing at all may result in low, weak recording.

Allow several seconds of silence with the tape running before beginning the program. When rewinding, keep the volume up slightly for the "Donald Duck" effect and stop immediately when the silent,

or dead, tape appears. You can more easily spot the sections in rewinding if you put a few seconds dead tape, place a small bit of paper or whistle sharply between each division of your recording session.

A tape or wire is automatically erased when a new program is recorded; however, if the previous material was recorded at too high a level—too loud— the erasure may not be complete, and garbled sound will result.

Have the tone control set at "high" or "treble."

When using phonograph records for background, bridge, or theme music, place the speaker three to five feet from the mike. Set the record player tone control on "low" or "bass," unless the records are speech or sound effects.

You can mark cues on the record with a wax pencil (chalk leaves dust in the grooves). Have students practice timing by letting the turntable rotate while lightly holding the record with volume off; then, on cue, release the record and slowly bring up volume to avoid "wow."

Q—What is "microphone technique"?

A—It's just a few ways of getting the best results from the microphone. The telephone company gives hints on how to make your voice more pleasant and understandable over the phone.

First of all, note the "live" and "dead" areas of the mike you're using. Most school recorders are equipped with semispherical or flat, one-side-open, crystal microphones. These are essentially uni-directional; that is, when facing one direction they don't pick up sounds on the opposite side distinctly. However, by keeping the open side up (laying the microphone down on its back), you make them virtually non-directional so that students can talk from all sides.

Pupils will normally need to stand one to three feet from the mike, depending upon the individual strength of the voice. This you determine by taking a voice level before recording; i.e., with the volume control constant, have each person speak a couple of sentences in the same tone he will later use.

No microphone can help a voice that is dull and artificial sounding, and the only way to develop a vibrant, meaningful voice is by practicing conversational reading. An occasional pause or even stumble adds more life and interest than a monotonous, obviously read script.

Except for characterizations, students should not try to develop unnaturally low or high pitches. Pitch, in itself, is relatively unimportant; good diction, appropriate pronunciation, and expressiveness are the prime essentials.

Q—I don't know anything about directing. How do I do it?

A—Whatever signals you use to keep the recording session moving along at the right pace and at the right volume is the proper directing technique for you. You many have seen a radio or television director making mysterious hand signals to his cast. A production textbook will show you what those signals mean, but you can make up your own signs to show your people when to start, stop, speak louder, softer, slower, or faster.

The tremendous advantage of tape recording is that if someone makes a serious mistake, you can stop, reverse, and record again; or you can cut it out of the tape altogether. Don't be too concerned with minor stumbles and word muffs, particularly in discussion, quiz, interview, or other extemporaneous programs. They frequently tend to make the recording sound more natural and convincing.

Get as many students "into the act" as possible. Only one person should actually operate the recorder controls, but at least another or two should stand by to learn. The same is true if you use a record player. You can have one or two script girls to take charge of scripts and follow the reading. Timekeepers check the time required for each person and the whole program in rehearsals and recording.

In round-table or panel discussions, it is a good idea to divide the class into several production groups of five to eight students. Each unit selects its own director, timer, moderator, etc., and works up a five- or ten-minute discussion on one phase of a broad topic. The units are recorded separately but played back as one program before the entire class. Aside from the keen competitive interest between groups, every student increases his over-all knowledge by listening to the whole discussion. The class may even want to vote on the best production group.

Q—Suppose there are some "bad spots"? Can I edit my tape?

A—This is such a simple job that you can watch someone do it faster than it could be explained here. Scotch *splicing* tape differs from usual clear variety, but in an emergency the latter can be used. Be sure that no sticky material protrudes over the edges of the recording tape.

In some classes, notably speech and drama, you may want to keep a beginning tape until the end of the year to check pupils' progress. Keep some of your better social studies and dramatic programs so that new classes can get the benefit of what others have done.

Recorded tapes can be kept for years, but they should not be stored near electric motors or other magnetic influence. It is unnecessary to erase the tape before recording, since this is done automatically. However, if you have several stored tapes that you would like to clean up, you can take them to the physics department and pass them through an electro-magnetic field.

Tape recording is a simple process—but that does not make it any the less effective as a teaching tool. The value of the tape recorder lies in its versatility, the fact that it may be used to play a professionally recorded program in connection with a specific study unit, or that it can help each student develop his own ability to express himself. This is the obvious test of any teaching aid: its adaptability to an individual teacher-student situation.

BIBLIOGRAPHY

Abbot, Waldo: *Handbook of Broadcasting*, McGraw-Hill Book Company, Inc., New York, 1950.
Braun, Everett C. and Frederick Jackson Stanley: *Let's Broadcast*, The Northwestern Press, Minneapolis, 1948.
Callahan, Jennie Waugh: *Radio Workshop for Children*, McGraw-Hill Book Company, Inc., New York, 1948.
Read, Oliver: *The Recording and Reproduction of Sound*, Howard W. Sams & Co., Inc., Indianapolis, 1949.

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More than 2000 citizens of Macon, Ga., visited classrooms in Lanier Junior High School for Boys one day last fall to view some of the means science provides to improve teaching and to make learning easier. The occasion was an audio-visual demonstration in celebration of Audio-Visual Education Week.

Entire Community Enjoys A-V Demonstration Day

By
FRED JOHNSON
The Nation's Schools. Vol. 45, No. 3. Mar., 1950. Pp. 75-76.

The demonstration was sponsored by the Lanier P. T. A. Cooperation of other schools in the county, the Macon police department, the state highway patrol, and the public health service made possible a varied and comprehensive program showing both equipment and technics employed in audio-visual education.

The demonstrations were conducted by regular classroom teachers, who used the audio-visual aids as they use them in routine school work. Twenty-five classes were in session; lessons in English, history, agriculture, science, shop, art, physical education, and speech were taught. Visitors could choose the particular exhibition they wished to see and later could visit other rooms and see the displays and equipment.

In one room the hoofbeats of a racing horse echoed the famous "Midnight Ride of Paul Revere"

on a wax recording, as colored slides of that historical event were flashed on a screen by an opaque projector. "The Life and Background of Longfellow" was shown on a 16 mm. sound film. "The Courtship of Miles Standish" was reenacted on filmstrips, and grammar was taught by a lecture illustrated with filmstrips. Tape and wire recorders were used to demonstrate technique in speech improvement.

The science department presented "Facts About the Moon" and "Interesting Things About the Planets," using filmstrips, and a sound film on "Matter and Energy." Laboratory equipment was used to demonstrate scientific principles.

History was taught with maps, records and an opaque projector. Colored slides showing the effects of different plant diseases were shown in agriculture. Displays of work by the students included model electric motors, a model of a city water system, and an art exhibit.

COMMUNITY AGENCIES

Joel Beall, sanitary engineer for the Bibb County health department, presented two sound movies dealing with community health. Judge Roy B. Rodenheiser, recorder of the Macon city court, taught a lesson in traffic safety with a sound film. This was followed by a lecture by State Trooper J. M. Moore.

Battalion 6-5, the local unit of the U.S. Naval Reserve, had an audio-visual display in the lobby. It included a daylight projector with ground glass screen showing naval training films, charts, displays of knots, electronic teaching devices, and other items of navy equipment. Chief Machinist Mate DeCandia arranged this exhibit and was on hand to explain the various devices to the public.

This mass demonstration served to acquaint the public with new facilities available to the classroom teacher.

HANDBOOK PREPARED

John H. Jones, who directs the A-V program at Lanier, has written an audio-visual handbook for use by all teachers in the school and has organized an audio-visual club in which pupils learn to operate all of the equipment used in the junior high school's program.

The success of the audio-visual program at Lanier results from close cooperation between several people and the groups they represent. When plans were being considered for the present junior high building, the board of education approved the inclusion of an audio-visual room seating 150 pupils. The P.T.A. has given enthusiastic support by sponsoring audio-visual programs and by giving financial aid in obtaining equipment and materials.   ○ ○ ○

A few months ago Moscow printed a photograph identifying Gov. Thomas Dewey as "a known anti-religious leader." This caption, of course, was a lie but the photo was not faked. The devilment inherent in such a situation (and the same technique has been used in American elections) suggests the necessity for a positive approach to the development of critical attitudes toward propaganda and the attempt to mold public opinion through the audio-visual sensations.

How Schools Can Teach Discrimination Through Audio-Visual Analysis

By
KENNETH V. LOTTICK
Education. Vol. 74, No. 2.
Oct., 1953. Pp. 106, 109.

In the case cited the solution was simple. The Russian propagandists had secured a picture made when Dewey visited the West Coast during the 1948 presidential campaign. He had been photographed when being greeted by the "Cavemen" of Grants Pass, Oregon. Indeed he was so received. In this western municipality, home of a group of imaginative and enterprising young men who choose to play such a role in serio-comic identification of their area of the state, this ceremony is customary. The "Cavemen" also participate, much to the amusement and enjoyment of the crowd, in Portland's Festival of the Roses.

Dressed in prehistoric clothing and flourishing jawbones the cohort presents an awesome as well as a rib-tickling appearance. While all of this is in the best American Chamber of Commerce tradition, the Russians saw the performance differently. In fact quite a bit differently. Their comments, designed for the proletariat, read:

"In the U.S. the power of the church is synonymous with the power of Wall Street; the downtrodden masses are forced to sustain the wealthy priests and hierarchy in kingly splendor while they themselves are forced to scrape the garbage pails behind the churches.

"Recently a group of peasants have formed a new organization to return to the old, pre-church days. They say that return to the old prehistoric era is better than the present conditions . . .

"This caveman organization is making him (Dewey) an honorary member . . .

"While the group's anti-religious campaign is noteworthy, their appearance can only bear out the savage and barbaric character of the Americans as a whole."

How many were fooled by all this probably never will be known. However, pictures, photographs, films, and all other audio and visual media offer such opportunities for misrepresentation and/or exaggeration whether displayed in Moscow or on Main Street. It is time to foster the development of attitudes of discrimination as they relate to the audio-visual impressions which assail us on every side. Critical judgment is necessary for the proper utilization of television, radio, the content and continuity of photoplays, filmstrips, photographs and all other such sensory media. Moreover, such a judgment may not be gained automatically but must arise out of a process of *using* discrimination standards and *behaving* critically.

This necessity for the creation of individual judgments was noted by Plato more than 2000 years ago. His "cavemen," it will be recalled, were hardly of the frolicsome type of those of Grants Pass, Oregon. Chained in some subterranean cavern, their minds were attuned only to their shadows on the wall. Indeed, such was the attachment to those idols that anyone attempting to dissuade them of their errors was promptly put to death.

Nevertheless, it is not necessary to go back to Plato or even to point in derision to the Russians. Within the past few months certain American-distributed films have offered as terrifying examples. One of the most glaring of these was *The Desert Fox*. This film, while openly perverting history, was the most sinister in that it attacked what standards of discrimination have been developed in theatre audiences up till now. It combined in unholy matrimony good documentary materials with pretended semi-documentary sequences which served to tie the "story" together. Thus, although individual shots may have represented some sort of truth, the result was utterly fantastic. It was, moreover, even more diabolical than the usual jumbling of Hollywood history in that the film seemingly offered only innocent truth!

It is for such reasons, especially, that a course, or exercises in, audio-visual discrimination ought to be offered. Otherwise we may become as Plato's barbarians or Moscow's proletariat. Such study preferably should be offered on the secondary school level but certainly in the general education courses of the lower college.

The very reasons why *Desert Fox* or any other of the same breed, although good "escapist" feature stuff, can be totally and unequivocally bad are the same in reverse to those which make mandatory courses in auditory and visual discrimination. *First*, *Desert Fox* audiences "educated" to appreciate and place dependability on the documentary film received a rude shock as they witnessed the perversion of the technique and even actual materials filmed in World War II. Many may not even then have

realized how they were being duped. This was not the case, for instance, in *The House on 92nd Street*, a frank psuedo-documentary. Realism here was used as a tool — a dramatic one it is true — but the audience recognized this touch and were not fooled by it.

Thus, *Desert Fox*, our example, attacked the standards built up since the advent of the documentary film — in fact since the birth of the film industry itself; viewers had learned to accept certain combinations of material and sequence as "true," some as spurious, and others as having only entertainment value. While there was no possibility of the crowds viewing *Desert Fox* falling into the panic of Orson Welles' victims of 1938, there is a parallel. Men from Mars were credible that October night because the presentation was couched in the manner through which people were accustomed to receive their "truth." Naturally, they acted accordingly.

But on to a *second* conclusion, which is even more devilish than one based on the standards alone. While technique and method are violently assaulted in the first instance, there is also the question of ideology. Opportunities within the audio-visual field for attitude building and opinion forming or for the production of action based on these vectors have already been suggested. Such a conclusion is too well known to be a subject for argument.

However, in *Desert Fox* we were asked to accept as true what patently was not; one of Hitler's "great lies." Yet this writer cannot completely condemn only one film for this. It may be, nevertheless, the beginning of a cycle, and truth will be the eventual casualty. That such a blunting of the opportunity for discernment will work havoc with the tools of education goes without saying. It can even reduce the level of American thought to that of a proletariat or of Plato's cave-dwellers.

Such an eventuality cannot but mean the death of all critical judgment and quite possibly the stereotyping, although abandonment in such a contingency would be preferable, of radio and visual images for classroom or for public use. Thus, the development of such critical functions as those alluded to earlier cannot but be agreed to. Such training may well become the salvation of the republic.

Yet there are some who would not agree with our thesis. "H. H.", presumably Henry Hart, Editor, *Films in Review* has this to say about *Desert Fox* and its ideological message:

"History abounds with instances of a defeated enemy becoming the victor's darling the moment he has been defeated, and of an ally in a victory thereupon becoming the new enemy. *Such switches never confuse the knowing who engineer them.* But

they do confuse honest men; intellectuals, and the masses — until the new propaganda distintegrates the old delusions and systemizes the new ones." (October, 1951. pp. 49-50).

The threat to truth implied here by "H. H." should be readily apparent to all who are engaged in education or attitude-building activities.

Now to suggest the beginning of a method of teaching discrimination in the classroom. Quite pertinent to the future of class activity in this direction is the news that Films, Incorporated is embarking on a program designed to bring feature films of merit to the classroom. That there are great possibilities here, although the motion picture represents only one of the media around which standards of judgment must be built, is undeniable. Bringing feature films to the classroom can surpass the use of "educational" films for the purpose indicated for several reasons. Commercial producers *have* unlimited funds; they *can* command the best research; they *can* take years in production if necessary. Under wise teachers classes can view *How Green Was My Valley*, a great drama of despair and hope in the Welsh coal fields, and Dickens' *Tale of Two Cities*, an epic of "liberty" run riot in the French revolution. Anachronisms and exaggerations will be detected and their presence may even enhance the quality of the discussion — which can lead to the development of standards, values, and critical reactions for use in other situations and for adult life.

Motives and facets of personality, *e.g.*, in *Disraeli* or *Conquest* (the rise and fall of Napoleon Bonaparte) will be explored and understood. And this will not be too difficult if the conventions and practices that have been arrived at by producers over a period of years can be maintained. These have been apperceived and accepted by cinema goers during the last half century. They have begun to reflect the worth of a code and the quality of a tradition. It is hard to see how *Desert Fox*, with it flouting of this heritage, can fit into this framework. Nevertheless, could it be shown as a terrifying example of the insidousness of propaganda? — that is, of course, after standards had been properly developed in the videors.

Dr. William Lewin, editor of the *Audio-Visual Guide*, in a letter to the writer, recently wrote:

"What we need is a rather comprehensive attack on the whole movie problem (and I am sure that he included in this thinking radio and television as well), including the responsibility of the schools for doing a constructive job. As Dr. Johnson pointed out in the 18th century, the laws of drama are given by its patrons. It is hard for Hollywood (or any purveyor of audio-visual sensory materials) to rise above the level of its audience, even though some people in the

studios are well able to provide superior films (or recordings.)"

Both Dr. Lewin and this author feel that there is an immediate need for the teaching of film (and other sensory media) discrimination in schools and colleges. It is all part of the growing problem of teaching critical appreciation of mass communication. Lewin has written a series of photoplay study guides which can be had for as little as ten or fifteen cents each; this writer hopes to bring the problem out into the spotlight for a more thorough discussion of ways and means for accomplishing an essential objective.

The danger inherent in misappropriation of the truth under the guise of "information" or "history" in a civilization so dependent upon mass communication is both appalling and sobering. Let the schools accept this their new duty with a willingness to pioneer and experiment to the end that a new generation with more critical standards than that of the older and more gullible one has been raised up.

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Every Wednesday evening television viewers in North New Jersey watch as highschool students gather for an hour-long panel discussion. The program is *Junior Town Meeting*, a radio and television production of stations WAAT and WATV in Newark, New Jersey.

Teenagers on Television

By
ROBERT B.
MACDOUGALL

Each week on *Junior Town Meeting* four highschool students present two-and-a-half-minute, prepared talks on such compelling topics as US foreign policy, universal military training, Alaskan statehood, and teenage problems. Following the prepared presentations, 40 minutes are devoted to questions fired at the panel by young people in the studio audience. Fred L. Hipp, executive secretary of the New Jersey Education Association, serves as moderator.

Each program has a winner determined by three judges. Every fifth program is an elimination contest using the winners of the four previous broadcasts. In late May thru a final contest we select three students to receive college scholarships.

GROWTH TOWARD MATURITY

Junior Town Meeting is now in its seventh year of production—six on radio and a seventh on radio and television. In that time more than 1000 young people have had the thrill of coming before a microphone and — more recently — a battery of cameras. Called upon to present information forcefully and an-

swer questions intelligently while thousands of people listen and watch, these young people have developed poise and selfconfidence.

"You know," says one recent panel member, "never before tonight was I really convinced that my opinions were valuable to anybody except me. Here on television, I felt my opinions were grownup and important."

A girl, now a college graduate, writes this about her program appearance a few years ago: "That was the biggest day of my life. I had expected to be terrified, but amazingly I wasn't. I knew that I had mastered the subject and that my answers to questions would be based on facts that my class and I had dug out. But the actual moment when I knew I could handle myself and my subject — that was when I began to feel mature."

PRODUCING A PROGRAM

More than a month before a given broadcast, we invite four highschools to share a program. Each highschool is assigned a segment of the topic and asked to send a student representitive. This student is sometimes appointed by the highschool administration, sometimes elected by students or faculty. Frequently the school holds elimination tryouts.

Once a panel member is chosen, his school helps him to gather his material and prepare his talk. His classmates tackle research problems, knowing that their representative's success depends a great deal on the information they send with him.

When the student representative arrives at the studio, he feels he is carrying the school banner with him.

Some two hours before broadcast time, 16 students arrive at the studio. Four of them are the speakers; they begin at once to work with our speech coach (Ruth Arnold of the Union City, New Jersey, schools), who times the talks, brushes out rough spots, and helps students to relax.

The other 12 students are the alternates of the preceding week's program and the speakers and alternates of the following week's program. They examine the prepared speeches and develop questions to ask the speakers. These 12 students, plus 10 from each of the four participating highschools, make up the studio audience.

LONG-RANGE VALUES

The benefits of *Junior Town Meeting* do not stop with the program for viewing, and a number of classes conduct discussions and follow-up activities based on broadcasts.

The program also has become an important builder of good public relations for schools. Teenagers are

usually telegenic. As the program moves along, the public sees these students think, sees them develop self-assurance. The public listens to discussions that are spirited, responsible, and meaningful. The public watches students give a splendid impression of themselves, their schools, and their country.

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We might as well face it. The mass age is here. Assembly lines, stadiums, the communication wonders of TV, radio, and film — these are the symbols of our culture: a mass culture, for better or worse. At least my wife's strategy of refusing to buy a TV set didn't work. My son sees Captain Video at the neighbors anyway and zooms to the dinner table nightly to refuel for his flight into space. And I tell myself now that I should have known better. You just can't stave off the communications r e v o l u- tion, nor industrialization nor atomic energy, by bur- rowing deeper into the collected works of T. S. Eliot. It is insufficient to dream about garden-belt cities, peaceful uses of atomic energy, or an omnipresent "Omnibus" on TV; it is insufficient to dread the thought of grimy steel towns, more Hiroshimas, or Uncle Miltie. Drawing on the powerful resources of the humanities, we must use intelligence, imagination, and patience to make what we dread more like what we dream. In short, as specialists in the humanities, we must stop talking about the mass climate of American civilization, and do something about it.

The Humanities, the Mass Media and the High School

By
PATRICK D. HAZARD
Education. Vol. 74, No. 2.
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By now we are all familiar with the cultural paradox of our times. Radio makes it possible to beam the best into everyman's parlor — but the best is too often the tail on a kite of soap operas and murder mysteries. TV's magic could add sense to sight and sound in the nation's living room; that is, if Arthur Godfrey would move over and give someone else a chance at the picture tube. Films can conquer space and time for drama and education; though now time is usually measured by the blast of six-shooters and space, by bosoms. The rotary press can flood the world with sense or with nonsense. At first sight, this outlook is indeed a bleak one. But the theme of this paper is optimism, an optimism based on, and tempered by, observation.

The Best for All

Mass communication techniques justify optimism, because they make available to all the classics of the past and present. Anyone who wants to can own copies of the great classics through inexpensive editions like Harper's Modern Classics, The Modern Library, and Regnery and Rinehart paperbounds. Doubleday's recent venture, Anchor Books, is an attempt to reprint outstanding modern novels, philosophy, history, and criticism. The paperback publishers have recently made a field day for readers of contemporary literature with the printing of *Discovery* (1), *New Voices: American Writing Today* (2), *Stories of Sudden Truth* (3), *Stories in the Modern Manner* (4),*Fifty Great Short Stories* (5), *One Hundred Modern Poems* (6), and three volumes of the semi-annual, *New World Writing*. The publication of these volumes of quality writing marks a new confidence in the taste of the American reader. In the words of the editor of *Discovery*, these experiments aim to give mass distribution to literature "of a kind hitherto excluded from general circulation because of the low esteem in which the American reader has been held." It ought to be mentioned here that some of the best short fiction being written in America is published in the women's fashion magazines like *Mademoiselle* and *Harper's Bazaar*. *Life* duplicated the feat of publishing Hemingway's *Old Man and the Sea*, with the publication in July, 1953 of James Michener's *The Bridges at Toko-Ri*. There is more quality at the corner drug store nowadays than even the conscientious reader can consume.

Art

The visual arts also benefit from techniques of mass production and distribution. For example, within the last year, *Life* has published features on Ingres, Tamayo, Rouault, and many others. Each week *Time* prints a color reproduction with explanatory text. *Art News* and *The American Artist* are special journals that make color reproductions available. The recent paperback, *Seven Arts*, is a collection of original essays which provide "an exciting opportunity to read valuable and provocative articles by the foremost leaders in the world of painting, sculpture, music, literature, dance, theatre and architecture." This paperback contains forty-eight pages of black and white reproductions of sculpture, architecture, photography, and painting.

Another conscious, and highly successful, popularization of classic paintings is the Metropolitan Miniture series. Each volume in the series contains twenty-four post card size reproductions to be mounted in an album with text. For each six volumes, the subscriber receives an attractive file. Recent themes include "Children in Art," "Six Centuries of Flower Painting," "Three American Water Colorists," "Goya," "Great European Portraits," "The Story of Christ," and "Japanese Prints." Art Treasures of the World recently launched an even more ambitious program.

Here the formula of distribution is a portfolio of six-teen color reproductions each mounted on 11" x 15" matting paper ready for framing. An eminent critic has described the quality of reproduction as "miraculous." Van Gogh, Rembrandt, Picasso, Modigliani Cezanne, Gauguin, El Greco, Toulouse-Lautrec and others are scheduled for publication in this new venture. Added features are analyses of each painting and a separate "Art Appreciation Course" prepared by an outstanding art educator. The Library of Great Painters contains ten 8" x 10" color reproductions, numerous black and whites, and descriptive text. Most recent additions to this series are Rembrandt, Botticelli, and Flower Painting. Pocket Books has also published art books that deserve a wide audience. *Famous French Painters, Pocket Book of Great Drawings, Pocket Book of Old Masters, Famous Artists and Their Models, Gods and Godesses in Art and Legend, Pocket Book of Greek Art,* and *Pocket History of American Painting*, are titles in print.

MUSIC

Technics have also aided music. Radio and mass produced recordings are at least partly responsible for the surprising maturity of American taste in music. The great interest in classical music has been used as an argument that Americans, if given the chance, will support the best in all the arts. A class discussion of the schedule of the local radio station might over a period of time make more students aware of the opportunities of listening to serious music. The same is true of records. The Varsity and Royale labels are just two that distribute LP classical music at fantastically low prices. Several New York mail order houses also sell records at considerable savings. The American Recording Society distributes the best in American music, book of the month club style. For appetites whetted by exposure to classical music, a paperback, Aaron Copland's *What to Listen For in Music*, could provide deeper insight. Indeed, in literature, in art, in music, we are faced with an embarrassment of riches. Potentially, all can participate in a culture, which, for reasons of limited leisure and income, was previously limited to an elite. The teacher in mass education can help make this potential audience a real one. Strategies of cooperation in building mass audiences for distributors of classic art are limited only by the resourcefulness of individual teachers. Ironically, supply outruns demand.

For the fact of the matter is that while what we can bring to the average American is limitless, what he wants is often very limited. Between the idea and the reality falls the shadow of mass culture. Edgar Guest crowds out Wordsworth; Cecil B. DeMille is preferred to Shakespeare; Johnny Ray outshouts even Beethoven. Can we, in a word, be optimistic about weaning a mass audience from mass culture?

This, at any rate, is the way the problem is usually stated. I would like to suggest that this is a wrong way of stating the problem. More people, numerically, enjoy Shakespeace than ever before. The same is even more true of great art and music. But our mass culture has produced people with little contact with these great works of art. To say that they do not appreciate some art, however, is a great mistake. Their arts are those of film, radio, TV, mass print and other products of a technological society. I feel that we ought to teach them to appreciate and desire the best in these popular arts. Raising the level of taste in the popular arts couldn't help but increase, in the process, audiences for classical culture. Before we succumb to despair about the future prospects of classical art, let us consider this possibility further.

MOVIES AS ART

The movies are one of the great art forms of the twentieth century, yet less than fifty colleges offer courses in the appreciation of films. And the movies don't deserve such a cold shoulder. Hollywood, which we have come to regard with a fishy eye, has recently produced *Come Back Little Sheba, High Noon, Dective Story, Streetcar Named Desire, Death of a Salesman,* and the brilliant cartoons of Stephen Bosustow's *UPA*. Even double features are no longer suspect, when *The Bride Comes to Yellow Sky* and *The Secret Sharer* form a twin bill. What would happen to the level of popular taste, if high school students saw and criticized films of this quality? *Films in Review* and the movie criticism in *Time, Newsweek, Saturday Review, The New Yorker* and the better newspapers provide the teacher with models for developing standards.

The same is true of radio and TV. These magazines also comment on their current fare weekly. The *Journal of the Association for Education by Radio* is another source that the teacher could use in guiding the listening and viewing of his students. Frequent class discussions of these popular arts are a natural for developing standards in art, for the students have experience in these popular arts that they can easily share. And learning to tell the difference between the excellent and mediocre, the challenging and the slick, in popular art develops standards that prepare the more mature for participation in classical culture.

APPLIED ART

Another phase of common experience that could help raise the level of popular taste, if openly discussed and evaluated in class, is art found in the products of mass technology. Clothes, houses and their furnishings, quality packaging and advertising (of which there is a heartening increase), cars — all these appurtenances of everyday living provide the average

American with a basis in experience for developing taste. For example, in Minneapolis for some years now, the Walker Art Center has featured an everyday art gallery, because, in the opinion of one of their supporters, "for the ordinary housewife, it is more important that she be able to recognize beauty and usefulnes in a well designed pressure cooker than that she be able to identify a Van Gogh." Perhaps our high school programs in the humanities suffer from too highbrow a concept of art. If we would broaden art to include well made articles of use in contemporary living, we would find that our students have a rich basis of experience in the arts. But as yet that experience is uncritical.

To see what I mean, pick up a mass circulation magazine and look at the ads. The better ads — Braniff Airline, Continental Can, DeBeers Diamonds — are, of course, quality art in themselves. The student certainly should have an opportunity to learn in school how to recognize and appreciate this quality. But especially look at the ads for durable consumer goods, clothes, and other articles of use. Here is a museum, actually, of contemporary living. Expert craftsmanship and design, exciting color, and the promise of function are abundantly evident. It is ironic that we have been anxious that our students be aware of the art riches of previous ages, and yet have seldom given a thought to making them sensitive to the brilliant panorama of contemporary design. Even more rich as recorders and formers of popular taste are the magazines devoted to graceful living. Just to refresh my memory, I recently surveyed the town library and a corner drug store for magazines of this sort. Here are some of the magazines that I found lavish reporters of the very best in contemporary architecture, interior decoration, and related arts: *House and Garden: A Guide to the Arts of Living, House Beautiful: The Magazine Dedicated to the Business of Better Living, House and Home, Better Homes and Gardens* and *Good Housekeeping.* Each of the supermarket chains sells a monthly magazine which counsels the American in better living. Indeed the enormous vogue of these self-help manuals in the useful arts is a clue to the teacher of the humanities. They indicate a desire to know and appreciate the best. This desire could be a powerful stimulus if directed, by the imaginative teacher, toward the total program in the humanities.

OPTIMISM JUSTIFIED

The writer's reasons for optimism are perhaps now apparent. Mass production and distribution make classical art potentially available to all. All Americans now have sufficient money and leisure to participate in some forms of classical culture. This great potential in the humanities is due to the social and economic changes of mass technology. Also, within the popular culture of TV, radio, film, and mass print there are hopeful signs of maturity. Perhaps, I have suggested, the best strategy for increasing an audience for the classics is to emphasize and publicize quality wherever it appears in popular art. Let me use a musical example. If Igor Stravinsky has been impressed enough by progressive jazz to write music for Woody Herman's dance band, then we high school teachers might well let our students discuss Stan Kenton, Dizzy Gillespie, and other innovators. By bringing popular art under serious classroom discussion, both popular art and the classics ultimately will benefit. For what is trivial in popular art is thereby distinguished from what is valid artistically. And demonstrating that popular art has its limitations, the teacher is in an excellent position to broaden the student's horizons to include the classics. By giving Stan Kenton his limited say, we may more easily explain the significance of Beethoven and Debussy. It is a commonplace in pedagogical theory that you start at the level of maturity and understanding of the student. It is curious that few have seen that the corollary for the humanities must be to start with popular culture.

For since the high school too is a mass medium, its culture (in the broadest sense) is inevitably a popular culture. But because it is a mass medium, because it shares with TV, radio, film, and mass print a mass audience, it is in a position to raise the popular taste. The school can do this by developing an appreciation for the best in popular art and a curiosity about the classics. Indeed we can be heartened by the fact that in the modern American high school (and increasingly in colleges) we have a countervailing force to the economic tendencies of the mass media to the slick, the sentimental, and the sensational. But the school will be a countervailing force only if we overtly try to develop taste for the best in popular art. This is why I feel we do the humanities a grave disservice if we either ignore popular culture, or, worse still, show it nothing but scorn.

In conclusion, this discussion may be served by making explicit several assumptions. To meet the challenge of popular culture, we must broaden the concept of the humanities as taught in the high school. Literature has been the humanities in the high school, but for purely accidental reasons. Cheap printing preceded color reproduction and recordings, so that at first in mass education, only fiction, poetry, and drama were readily available. These conditions no longer exist. Now, painting, music, and the minor arts are equally available. This is not the only change needed, however, in our concept of the humanities. The very technology that has made the great classics in all the arts accessible to all has also fostered uni-

que art forms: TV, radio, journalism, and mass produced consumer goods. The traditional role of the humanities is to introduce the student to the art of his society. Therefore the humanities, I feel, ought to consider their major role as that of sensitizing their students to the best in this popular culture, and, whenever possible, showing the relevance of this quality to the great classical tradition.

The high school teacher then, the manager of a mass medium has a new challenge. If he can raise the level of taste in popular art, he will not only reinforce mature tendencies in the popular culture, but he will also necessarily develop larger audiences for the classics: Shakespeare, Faulkner, Beethoven, what have

you. By deemphasizing the classics, except for the most mature, and by concentrating on the popular arts, we will, I feel, do greatest justice to both the classics and popular art. Once again, let me say, our problem is an embrassment of riches. Supply, both in the classics and the better popular art, outruns demand. Will the teacher of the humanities help to create the demand for a supply our machinery has made possible? Whether America's new frontiers of leisure will be filled with opiates or sources of community strength depends in large measure on how effective we make our most valuable mass medium—the American high school.

What Is Your School's I.M. Quotient?[1]

By
WILLIAM H. DURR

Administration

1. Does your school system have a director of audio-visual education or instructional materials?
2. Does this person perform the following services?
   a. Supervise selection of materials for purchase and addition to your audio-visual department.
   b. Inform teachers about available materials.
   c. Assist in providing audio-visual facilities.
   d. Provide for the distribution of materials to teachers when needed.
   e. Help teachers to make good use of materials.
3. Is there a person in your building who serves as coordinator of audio-visual instruction?
4. Does he have released time from teaching to carry thru these responsibilities?
5. Are any of the teachers active members of
   a. NEA Department of Audio-Visual Instruction?
   b. State or local audio-visual organization?
6. Is there an advisory committee on audio-visual instruction in your school system, with members of the teaching staff on the committee?
7. Does this committee assist in formulating plans and policy for the development and operation of the audio-visual program in your schools?
8. Do teachers assist in the selection of instructional materials for purchase for your school?

Materials

9. Do teachers in your school have readily available the following types of materials?
   Motion pictures
   Filmstrips
   Slides
   Recordings
   Flat pictures
   Maps and charts
   Models and exhibit materials
10. Does the budget permit teachers to rent and and pay postage on materials such as films which they need to use in their instruction and which are not available locally?
11. Does your school provide equipment and materials that teachers and pupils may use in producing their own audio-visual materials, such as cameras, film, slide-making materials, recorders, mounting board?

Information on Materials

12. Is there information on local resources which may be used on field trips or at school?
13. Do teachers have ready access to catalogs and listings of available materials?
14. Are materials frequently displayed so that teachers become aware of them and are encouraged to use them?
15. Are teachers invited to frequent the audio-visual center to browse and find out what materials are available?

Distribution of Materials

16. Is it easy for teachers to request the use of audio-visual materials?

17. Are teachers informed in advance whether requested materials will be delivered to them when needed?
18. Are such materials provided to teachers for sufficient periods of time to permit preview, proper showing, and re-showing?
19. Does the center provide for keeping materials and equipment in good condition?

Facilities for Using Materials

20. Can the amount of light in the classrooms be controlled so that films can be projected clearly?
21. Are there electrical outlets in the front and back of each room?
22. Is the following equipment available?
    Sound motion-picture projector
    Filmstrip and slide projector
    Three-speed record and transcription player
    Tape recorder
    Radio
    Television receiver
    Opaque projector
    Overhead projector
23. Do classrooms have adequate bulletinboard space?
24. Are there rails or racks in classrooms to permit display of maps, charts, etc.?
25. Is there space provided for convenient storage of equipment when it is not in use?
26. Is there space for storage of materials which is open to teachers so that they can readily and easily check on materials that are available?
27. Are there facilities and materials that will permit teachers and pupils to prepare photographic pictures, handmade lantern slides, mounted flat pictures, etc., for class use?

Utilization of Materials

28. Have most teachers had courses in audio-visual instruction?
29. Do most teachers make regular use of motion pictures, slides, filmstrips, and recordings as an integral part of their classroom instruction?
30. Can all teachers operate the audio-visual equipment available?
31. Do teachers make use of field trips as an aid to developing better pupil understanding?
32. Do teachers make it a practice to preview materials before using them with a class?
33. Do teachers help pupils establish objectives for seeing the film before it is shown?
34. Do teachers frequently re-show materials when they feel that such re-showing will materially aid pupil learning?
35. Are audio-visual materials used in faculty meetings or by teacher study groups?
36. Are audio-visual materials used in PTA meetings or with other out-of-school groups to interpret the school program?
37. Are there books and magazines dealing with audio-visual instruction in your school's professional library?
38. Does your school have students trained to assist with the operation of audio-visual equipment?

Even though this may be the Age of Discussion, stimulating classroom discussion is still a wide-open challenge. At Wright Junior College a general social science course is required which meets in large lecture groups and small discussion-sections. In the latter, students grapple with social issues, raise questions, and attempt to arrive at some conclusions of their own. However, making such progress usually requires the student to enter voluntarily into a discussion. Accordingly, each teacher attempts to stimulate this entry into discussion.

Social Science Discussion and the Tape Recorder

By MEYER WEINBERG

Often interesting reading materials serve the purpose: field trips are widely used, as are classroom appearances of outside speakers. The first method has a great limitation—too frequently such materials are considered "stuffy" and distant from the student. The second method is excellent, but few large schools can carry it out extensively. The third is vivid, but many times results in much wasted class time.

In searching for alternatives, the Wright Social Science department hit upon a method which, apparently, is used hardly at all: recording actual interviews with persons inside and outside of school. Such interviews were made periodically, and each was related directly to a unit of study. At every discussion-section, playing back of an interview opened the session. Students were asked to keep several general questions in mind while listening. Because the interview was deliberately made so that it would be controversial, there were always some students on either side of the issue. Thus, many times the great initial hurdle of opening the discussion was satisfactorily solved.

How many social science class discussions have faltered on the subject of financing adequate medical care! Passions reign supreme in this area. Very often students will wonder whether the material presented is authentic—such inquiries are encouraged. Dr. James Hutton, past president of the Illinois Medical Society was interviewed, and, on another occasion, Paul Sifton, Washington legislative representative of the United Automobile Workers—CIO. Presenting these opposing viewpoints at the same time, in the form of a single ten-minute recording, was more authentic and interesting than the weightiest tomes of formal material.

The course deals also with personal adjustments, which is a problem of great social concern as well. One aspect of this is the lack of adequate psychiatric and other therapeutic agencies. To underscore this, a confidential interview was obtained with a twenty-one-year-old former student, who related his meanderings while trying to find low-cost psychiatric care. Many students literally gasped when he stated that he and his family had spent almost $2,000 in a period of a year and a half.

In connection with yet another unit—on race relations—the problem was presented in terms familiar to students. Three students were interviewed on questions relating to fraternities and sororities—one student was a vice-president of a fraternity: one, an independent; and one, a former member of an interracial sorority. Each had been interviewed privately, though all had been asked practically identical questions. The juxtaposition of the three viewpoints was very revealing to the class.

In all these instances, as well as in others, confronting students with a stark contrast of viewpoints in a realistic setting proved helpful in producing interest and stimulating thought. At the same time too-frequent use of the device could lessen its value. Its main contribution has been to vary the classroom regimen along constructive lines.

The magnetic tape recorder was found to be the most appropriate machine for interviewing purposes. This is an electronic device which records sound by transferring magnetic patterns onto paper or plastic-coated tape. The technical quality of the finished tape is practically independent of the operator's skill, thereby allowing interviewers to concentrate on the subject-matter of the recording. Thus, unlike disc recording, it is possible for amateurs to make recordings of a very high quality. Another advantage is that these instruments are portable and require no special equipment. The tape may be played back immediately after being recorded. A favorable cost-factor is that each tape may be played over five hun-

dred times; the recorded material may be erased by a simple operation, and new material immediately recorded.

Relatively little attention has been devoted in the educational literature to this device, probably because of its novelty. Further, most references dwell on its *passive* uses, such as speech practice, recording of radio broadcasts for later classroom use, etc. The use of this device at Wright Junior College is perhaps one of the few *active* uses to which the machine has been put for educational purposes. Consequently, much of the progress in the field has been made through trial and error.

The entire interviewing project was organized as an activity of the student Social Science Club under direction of the faculty sponsor.

It was found that interviews can be obtained in any community. In larger cities, it is always possible to learn in advance of visiting dignitaries; conventions are a rich source; frank student opinions are always interesting to other students. At all costs, what should be avoided is merely transcribing the textbook by interviewing "experts" only. Commonsense opinions flavor any discussion of social problems. The primary, though not exclusive, place for purely factual material is the printed page, and not the tape.

It is necessary to plan at least several units ahead in order to allow time for the interviews to be made and to be fitted into the class schedule. Ideally, an interview-schedule should be on hand at the beginning of each semester. In this way, the tapes will not appear as intruders, but rather as aids to classroom work. Preceding the use of a tape, the class should be given several leading questions to consider while listening.

Interviewing is an art, but it is also highly dependent on knowledge. Thus, no matter how glib the interviewer, he must know his subject-matter; otherwise, he will be unable to ask pertinent questions. The interviewer must be absolutely neutral during the interview, even though he may basically disagree with the interviewer. This was perhaps the most difficult lesson for student-interviewers to learn. Overcoming this tendency to "jump at" another person because of a difference of opinion was an important exercise in applied social science. If possible, a list of formally-prepared questions should be avoided. As the interviewer gains experience, he will need less and less advance preparation. A lively interview then becomes more likely. Preferably, the interviewer should be accompanied by a machine-operator, so as not to detract from the main business at hand. It is best, however, to train students in both skills.

Editing of the tape in order to delete unsuitable matter is highly recommended, although it is a tedi-

ous task. It is not as difficult as it is time consuming; yet, it makes the classroom presentation very economical.

The entire teaching staff should be allowed to suggest topics for interviews. Likewise, the finished product is best previewed in a staff meeting, if only for purposes of drawing up the leading questions previously mentioned. Teachers are usually unwilling to share their class time, and unless they are convinced of the relevance of the interview, they will tend to ignore it—and rightly so. A short post-evaluation session can be extremely valuable in preparing further materials. Needless to say, a student-operator, scheduled in advance, should be given the entire responsibility for handling the technical details. Interviews should generally not consume more than ten minutes of the class time.

Because the commercial tape-recording industry is less than a decade old, new companies and models are constantly entering the field. This makes it difficult for any single person, let alone a non-technician, to keep up with the latest developments. Several criteria for a good machine can, however, be suggested. For interviewing purposes, the machine should be portable and lightweight; its reel speed should be either $7\frac{1}{2}$ or $3\frac{3}{4}$ inches per second, or preferably both; the speaker should have an output of at least three watts and a frequency of 5,000

cycles; there should be a tone control; and to facilitate editing, there should be a fast forward and fast rewind reel speed. Red or brown oxide plastic tape is most satisfactory, although paper tape is also acceptable. The finished tapes should be stored in a place not subject to extremes of temperature.

A number of models incorporating all the above features are available for around $200. For interviewing purposes, it is unnecessary to go into the very high price field.

It can be agreed that no single teaching method, new or old, will guarantee success. The tape-recorded interview is merely one more teaching material. Used in the way described here, the recorder can help teachers bridge the gap between the classroom and the real world of social problems. Inspired and informed teaching is by no means belittled by this technique. Rather, the advent of this device will present new challenges to the imagination of both students and teachers.

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If you read the speeches of college presidents you will find that they have come out four-square, unequivocally for a broad education and against a narrow education. They are for general education and are against a highly specialized or specific education.

The Role of Audio-Visual Materials in General Education

By EDGAR DALE
Address Delivered at Stephens College Audio-Visual Conference, 1951.

They are against vocationalism and for an education that is good for everybody.

I am for these things, too, even though I'm not sure what they mean. You are for them and maybe you know what they mean. But I submit that we are not reaching this kind of objective in much of our college teaching. Maybe we can't. Maybe we are trying to bite off more than we can chew. At any rate I'd like to discuss the problem of general education and see if there isn't some way in which films or drama or radio or similar audio-visual materials can make some significant and noteworthy educational contribution.

If we analyze the various plans for general education, you see that basically their differences often lie in the kind of subject matter alleged as good for general education. Sometimes it is argued that it doesn't matter what you teach, it's how you teach it . . . This is at best a half-truth.

Let us see if we can get some meaning out of the word *general*. Too often it has been mistakenly used as meaning *not specific*. Yet a general education that is not specific is no more possible than being a man before you have been a boy. Ditto for girls and women.

Specificity and generality are little boys and big men. We often hear statements saying that we want to get away from hundreds of specifics. There is only one way educationally to do this. You cannot do it by throwing away specifics or concreteness or illustration. The only way to move away from specifics is to move them into generalizations. As William James once said: "We can only see as far into a generalization as our knowledge of its details extends."

This too is a generalization that needs qualification. You do not merely start with specificity and then expect that at some later date specificity will mechanically move into generality. Actually what we are trying to do is to deal with specifics (the only thing out of which meaning can come) in an atmosphere or mood of generalization.

We are all against the teaching of unrelated specifics, but specifics do not become related because we *say* we are teaching or developing generalizations. Specifics become fruitful generalizations because we *make* them so, because we purposely plan and work for generalization . . .

In one sense the scholar staking out a small area for depth analysis gets a kind of "king's acts" from present day application. But the teacher of general education gets no such exemption. What is taught must either be related to the present day interest at some phase or other or it will be unused and this means that eventually it will be forgotten . . .

We cannot master generalizations in the same way that we can master specifics. Indeed, that's a good test of whether it's an important generality. A little vocational trick can be easily mastered because it is usually quite concrete and specific. You can quickly learn to tie a knot in a certain way or do a repetitive operation as in a factory. The beginning and end of the process is at hand, visible. It is a *closed experience* as far as one's responsibility is concerned.

But the difference between the specific and the general is that the general is always an *open-ended, never closed* event. It always has a growing edge. We might better speak of generalizing rather than generalization since it is a process rather than an end product which we are after. It is education in generalizing that we are working for.

The difference, then, between a narrow and a broad education is that in a narrow education you get things over with. You finish with them. You circumscribe and delimit the range of connections with other life experience . . .

You cannot just *add* specifics to get a generalization. You must integrate them, put them into a pattern, reconstruct them. It's like the fellow who said

that he could read the words all right but the sentences bothered him a lot.

Specificity is important. It is not antithetical to general education. It is corrollary and anterior to it. The fact that an experience is a narrow one *at this time* is not unfavorable as far as later generalization is concerned. The issue is the dynamic quality of the experience itself. Is narrowness moving into broadness, is specificity moving toward generality? These are the questions we must ask.

I want to make a second point that it is only through your own generalizing that you get generalizations. You must grow your own. I'm not too certain how systematically we can grow these generalizations. Certainly I would try to do it as systematically and logically as I could knowing that when we deal with large classes, we cannot follow theories of learning which might apply only if we had individual tutors.

My basic thesis then is that far, far too often we have contented ourselves with merely having our students memorize the quite specific facts and verbal generalizations in textbooks . . .

There has been a good deal of discussion about orientation as a part of general education. We try to orient students to the problems of the world — give them a general view, we say. But what has been the history of such courses? Many of them like Powder River in Montana have been a mile wide and a foot deep. They do not orient, they are forgotten . . .

Certain so-called broad courses have been unsuccessful because they have attempted to *cover* the ground when we should be *uncovering* it. They have merchandised high-level abstractions and generalizations which could not be understood by the students. We can, of course, go to the opposite extreme and think that we ought to spend all of our time uncovering ground at one spot and cover no other ground. This is generalizing in depth. We must also have generalizing in breadth. Some kind of balance is necessary. But in any case, we must uncover enough ground to develop significant generalizations in any study. Otherwise there is no product because there has been no process . . .

My proposal basically is the introduction of increasing amounts of concrete material at the interest level of the learner. Further that these materials be introduced primarily with the idea of teaching how to generalize with skill, as subject matter for building generalizations . . .

How can we get students to do disciplined generalizing? Oftentimes movements come up out of the lower schools which have significance for higher education. The core-curriculum is one. I would like to propose a kind of co-relative curriculum to be set down inside present subject matter arrangements, a kind of interstitial education.

The pattern for it should be something like this. In our university, for example, we are now giving a seminar on communications. Professors from sociology, journalism, radio, audio-visual education, and political science are working together on it. It is an excellent idea but expensive. The same co-relating experiences can be developed if we use films and other media to help solve the big important problems in American life.
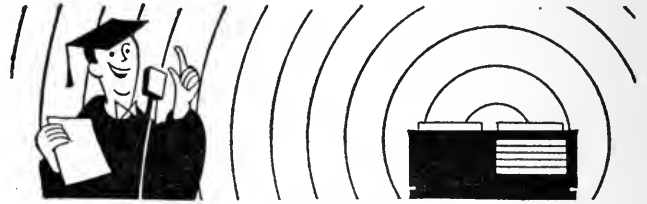
To solve these problems we must also use the subject matter we are learning in the Freshman, Sophomore, Junior, and Senior years. It represents vertical division of subject matter and we also need an horizontal cut-across. Courses such as those in marriage at Stephens are a case in point. The marriage courses not only use data gathered from subject-matter areas—facts, generalizations, if you please, but give further point of historical, biological, psychological generalizations by using them in a new and important problem-solving situation. As you know, a wide range of films and records is now available for such courses.

Let us think, then, of a college which is organized in large part on a subject-matter basis. This is good on the whole, and I see no significant change occurring in this pattern for a long, long time. But it is possible, it seems to me, to take certain over-arching problems—problems of living—and use them both *preceding* and *following* the studies of subject-matter, depending upon the level of generalization sought.

To teach in these problem fields requires a cluster of quite concrete and semi-concrete experiences. It requires a variety of teaching materials including charts, maps, graphs, models, exhibits, field trips, recordings, filmstrips, and motion pictures, plays, sociodrama.

This is the stuff out of which generalization is made. These beads of experience must be strung together on some hypothesis, some purpose, in order to give them lasting meaning. There must be generalizing.

Let us take an area which has great possibilities for what I shall call interstitial education. I refer to the field of mental health. I have here a report of "The National Association for Mental Health." It

lists 45 films dealing with mental health. I note that only one of these films was produced before 1940. The great bulk of them were developed after 1945.

Now *books* on mental health are important as a part of general education. They must be used. Books represent the intellectual deposit of specific experiences which have been moved into important generalizations. Yet, books alone are not enough. They lack the specificity, the warmth, indeed some of the unutterable poignancy of concrete experiences.

Through audio-visual materials, we can supply the bases for sound generalizing . . .

In our zest for general education, we must not forget that when you read you put meaning *into* the printed page and those words can only be reminders of experiences we have had or that other people have had. Unless these words have taken hold of us, unless they have the warmth and richness of a letter from home, they aren't going to convey much meaning. Do you think your graduates, your seniors have "mastered" the generalization that the way to have good human relations is to understand what makes you tick and what makes the other fellow tick . . . gain an understanding of the genetic development of people—what has happened to them at some point to make them like they are? Someone once said: "We need reminding more than we need instructing."

Actually most teachers—and I am afraid most college graduates—fail to look at human behavior longitudinally with a time sense. We expect the Chinese and Indians to be like us and when they're not we're hurt and surprised. We forget how people behave when they have been hungry most of their lives . . .

Let me go a little further in this business of mental health or human relations. Let us look at the stage play as audio-visual material. Let us see what its role is in the instructional-educational program of the college.

I wonder if you saw "The Death of a Salesman"? An excellent playwright, Arthur Miller, dealt here with a profound generalization through the medium of a man and his problems. Willy Loman, according to his son, Biff, didn't know who he was. Worse still and perhaps because of it, he lied to himself. He lied to himself in order that he might get the emotional security which his job didn't give him. Actually Willy was much better at making things than he was at selling. Maybe he was on the wrong job.

Now this is the generalizing I did in reference to this quite concrete, quite specific play. It would be interesting to sit down with other persons and get the benefit of their generalizing. We might even secure a generalization like the one from the man who said, "It's easy to see why Willy Loman failed, New Eng-

land always was lousy territory" Are your students generalizing about the Ox-bow Incident? About Pinky?

Let's turn to an entirely different area. The teaching of history. One of the objectives in the teaching of history is the generalization of the continuity of history . . .

I am always struck by the fact that in teaching history we are trying to get youngsters to remember things that happened hundreds and thousands of years ago when many of them cannot easily remember what happened in the last 10 years. This means since they were 8 years to 12 years old if they are college students. We must, therefore, by motion picture, by drama and exhibit and by other means reconstruct the past. You can't generalize about the past unless you can reconstruct it.

Sometimes we can physically reconstruct an entire colonial village of about 1500 population as at Williamsburg, Virginia. If they can afford it, your students can go there and see what life was like in a fairly prosperous colonial community. They will generalize, probably with some amazement that the furniture, the china, the wallpaper, the architecture, will in many cases show more taste and discrimination than we have today. It was a gracious living based in part on slave labor. Some say, of course quite ungraciously, that we modern Americans have lived well at the expense of Chile, Iran, China. This is another generalization.

If we want to reconstruct the last 50 years we can see it in a film titled "Fifty Years Before Your Eyes." Two other films have attempted to do the same job. They run about an hour. No history teacher can teach as much history as does this film in that period of time.

One can also turn to recordings as a way of reconstructing history. We may listen to Ed Murrow's program on Friday and hear the voice of the week. We can turn to his recordings "I Can Hear It Now," and hear history in the making. We can use filmstrips enabling us to study older documents . . .

We might see a film like "The World Is Rich." We need to study world population problems and try to figure out what will happen if we increase the world food supply but do not limit the population.

Have I given you enough concrete examples so that you can generalize my points? I hope so. Do you see anything wrong with this program? One of the one I have suggested is that it will make education easy. Presumably then one would not want to take the students visually by an Encyclopaedia Britannica film to ancient Rome because it would then be easier to understand how people lived. Let us

follow this argument a little further. If such semi-concrete film experience is bad because it is easy, then to study this history of Greece it would be even worse to have students go to Greece for first-hand study because to do so would make many ideas clear and concrete which would otherwise be bookish, academic, and unreal. Workers in the audio-visual field are not trying to make education easy, we are trying to make it clear, effective. Could anyone conceivably object to a motion picture taken through a microscope which shows actual cell division in the life cycle of a frog? The film makes quite clear what cell division is. But if we are trying to make our subjects hard, why not adopt some really novel procedures. Let's blindfold students and not let them see the demonstrations in front of the class.

Many of you are saying in reference to the introduction of more concrete experience, "But isn't that what we have been doing?" Yes, I think it is — if you are excellent teachers. However, the administrative job of getting and using concrete materials whether experiments in zoology, reproductions of historical documents, seeing excellent plays, making good charts and graphs, is no simple one. Just as we have had to have a library to keep track of our books and magazines, to make them available when needed, so too, we must have an administrative arrangement for the selection, procurement, classification, distribution, evaluation, and upkeep of audio-visual materials.

There is also the big job of re-education of some faculty members in the art of discussion, helping students generalize skillfully. Many do not know how to use these new materials.

May I say in conclusion that there are two ways of getting sound, thoughtful, vigorous generalizing —which is what general education is. We can get it in a somewhat formal way through courses. Courses laid out, not primarily in terms of problems to be solved, but rather as a way of getting directly acquainted with the ideas in such fields as geology, chemistry, history, mathematics and the like.

I'm not unduly critical of this kind of division. Physics is a subject, a science because the stuff of which it is made, its generalizations, fit together logically.

But the logic, the maturity of mind necessary to move these generalizations into a common core may be quite fitting for a mature person but not necessarily for an immature one.

Will these interstitial courses work? Yes, if they are well taught. They must be well taught because their deficiencies are much more readily seen than some deficiencies in the old established courses. Usually in the fields that cut across subject matter

lines, there is no neat logical set of material *laid out* for the student and I emphasize laid out. He must, in a sense, chart his own growth and development. This is, unfortunately, so much like life itself that we tend to ignore such approaches and shift back to the less life-like but more easily recognized and administered regular courses.

We are always expecting some miraculous cure for the ills of education. We expect a change like the woman who took the wonderful medicine, Hadacol. In her testimonial she said, "Since taking this new drug, I'm a different woman. Needless to say, my husband is delighted." There is no miraculous cure like this in store for us by introducing more concrete experiences through audio-visual materials. But it can help us use the only method there is for getting a general education . . . generalizing.

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Professional Magazines

Audio-Visual Communication Review	*Film News*
Audio-Visual Guide	*Film World and*
Business Screen	*A-V World*
Educational Screen	*Teaching Tools*

On October 10, 1934, the Pennsylvania State Council of Education passed the following resolution: "Resolved, that all applicants for permanent teaching certificates on and after September 1, 1935, shall be required to present evidence of having completed an approved course in visual and sensory techniques." Thus, Pennsylvania pioneered in a realm of education which has since developed into one of the most important areas of techniques and materials.

An Audio-Visual Service in a Small College
By JAMES S. KINDER

In 1935, the Pennsylvania College for Women began offering teacher-training courses in visual education in order to meet the state requirement. After two years' experience, it was clear that much of the potential value to be derived from this course in methods and materials would go for naught because schools were handicapped by lack of equipment. Consultation with leading schoolmen brought out the fact that they had not purchased motion-picture projectors because there were few films available except those to be rented from film libraries many miles away. This condition was most unsatisfactory because of shipping costs and the uncertainties of delivery. Accordingly, in 1938, the PCW Film Service was inaugurated to provide a rental film service chiefly for Pennsylvania, which would make available to schools and colleges instructional motion-picture films on a library-maintenance basis.

The area served by PCW is not limited geographically, but the limitation of duplicate prints of many titles imposes a natural restriction; therefore, although some requests from west of the Mississippi are accepted, in the main the service is localized. Priorities have never been set up.

Practically every type of institution or organization has at one time or other called upon the PCW Film Service for films or recordings. Among these are public and private schools, colleges, universities, forums, county agricultural agents, industries, service clubs, fraternal organizations, sportsmen's clubs, hospitals, housing authorities, penitentiaries, employment offices, army and navy groups, veterans' organizations, scout camps, churches, church camps, recreation clubs, police groups, public libraries, Red Cross branches, settlement houses, teachers' institutes, YM and YWCA branches, department stores, garden clubs, unions, granges, defense councils, bond rally groups, and roadshowmen. Naturally, schools and colleges make greatest use of the library, and practically all accessions to the library are made with instructional needs uppermost in mind.

A well-selected library of films serves many purposes. Film materials are flexible and useful in many ways and to many types of groups. During strikes a heavy demand comes from the strike-bound plants for films to be used by foremen and such other administrative personnel as are allowed in the non-operating plants. Unions also call for materials for use while their members are on strike. Administrative requests are chiefly for materials of a training nature; workers' requests run largely to morale materials.

It may, therefore, be said that the first purpose of the PCW Film Service is a distributive one. A second purpose, no less important than the first, is to provide the faculty and students of the Pennsylvania College with films, slides, and recorded materials. Faculty members are free to requisition films at all times and in any quantity. No charges are made against departmental budgets for this service. During the first year of operation the science department was the only department which used films. Year by year since 1938 other departments have asked for materials, until now nearly all departments make at least a nominal use of the resources of the film library. Many instructors have had no experience or training in the use of audio-visual aids. Many do not know the materials which are available to them. Screenings, previews, demonstrations, and discussions are held regularly at PCW to keep faculty members informed.

For campus use the education department of the college has at its disposal a varied and significant array of films, filmstrips, records, and transcriptions.

Student-teachers doing practice work in local schools borrow a considerable number of films. The library has film materials in every subject-matter area, from agriculture to zoology, and for every age-level, from the primary to the graduate school.

The public-relations value of the PCW Film Service (or any similar service) cannot be measured quantitatively, except in terms of the number of schools served and the audience reached. Figures of this type also show the growth of the service. The audience totals for PCW at three-year intervals are:

1938-39	211,000
1941-42	581,250
1945-46	3,000,000

Every day additional schools, churches, and clubs are purchasing projectors and record players. Increased utilization of audio-visual materials by teachers in all schools makes an expansion of services imperative. Long-range plans have been formulated to meet the constantly increasing demand for service. One aspect of this development is concerned with new quarters, to be located in a new college building which is now on the "boards."

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The Teaching Aids Laboratory has its headquarters and consultation offices at 13 Page Hall. Here also are located the Schedule Desk, from which projections for various University classes are scheduled, and an extensive Recordings Library of non-musical materials. The Chart and Graph Service is located in the north wing, and the Curriculum Materials Center in the south wing, of College Road Annex. The Recording Studio and the special foreign-language listening center are located at 12 Derby Hall. All of these services except the Curriculum Materials Center are administered free to all University personnel using them for instructional purposes. The Curriculum Materials Center is financed partly by laboratory fees charged to students in student-teaching courses, and its services are consequently largely restricted to student teachers in the College of Education.

Teaching Aids Laboratory

By NORMAN WOELFEL

A number of special mimeographed and printed publications in the audio-visual field for teacher education have been prepared by the professional staff of the Laboratory. All available published materials are now on display on a special bulletin board at 13 Page Hall.

As soon as space is available, the various services of the Laboratory will be brought together in one central place. We believe that the University in-

structional needs which the Laboratory is called upon to meet can be much more efficiently handled if our staff can work together as a team in a common office.

The teacher-education filmstrip project continues to develop. In addition to "How to Keep Your Bulletin Board Alive," "Simplified Filmstrip Production," and "Making Teaching Effective," each complete with explanatory accompanying notes, we are planning other filmstrips to be released for professional use, notably one dealing with chalkboard techniques, another with student personality problems, and a third with Ohio cultural backgrounds.

Our professional staff, in addition to their specific area duties, assist greatly in making Education 602 (Visual Education) an extremely practical course for students planning to teach in any professional field. Mr. Woelfel assumed major responsibility for the fall, winter, and spring quarters, and Miss Gibbony handled it during the summer quarter. Between two and three hundred students take this course each year. Under Education 600's and Education 800's Mr. Woelfel conducts a seminar each quarter which attempts to develop a generalized educational viewpoint on the mass media of communication. Miss Williams meets frequently with classes in various subject-matter areas as a regular part of her consultative responsibilities at the Curriculum Materials Center.

A brief statement of the nature of services rendered by each major division of the Teaching Aids Laboratory during the past year follows.

The past year has been a period of adjustment for the Chart and Graph Service. Proceeding under a new staff and occupying new space, the Service has continued to meet the demand for instructional aids in the campus classrooms. The year's effort has brought emphasis to the need for an experimental approach to the designing and producing of teaching aids. It is believed that better design must push each teaching aid to its utmost in interest and clarity before these products truly fulfill their educational purpose. Old materials are being re-examined, and new ones are being sought, in order to increase flexibility and durability of completed aids. The number of demands for work has reached a point beyond which the present staff (supervisor, one full-time assistant, and occasional student labor) cannot go without seriously diminishing the quality of its products. It has become necessary to limit the quantity of work undertaken for any one University department in order to preserve quality of effort. The next step must be to increase the size of the staff. It is hoped that this may be accomplished without long delay.

The past year has seen the continuation of a gradual increase in the number of projections planned from our Film Booking and Schedule Desk for various classrooms and auditoriums on the campus. These are handled by part-time student projectionists using portable projection equipment. The use of the two projection rooms (Page 10C and Derby 108) which are supervised by the Teaching Aids Laboratory has declined slightly for two reasons: first, these two projection rooms are scheduled very close to capacity, and it is difficult for an instructor to arrange for a place in this crowded schedule; and second, ventilation and acoustical conditions in these two rooms are sometimes poorer than in some of the regular classrooms.

Although there has been very little expansion in the film library of the Teaching Aids Laboratory during the past year, the number of film loans is still very high, almost double what it was two years ago. There has been a great increase since last year in the number of films borrowed by the Teaching Aids Laboratory from outside sources, particularly from sources other than the State Department of Education film library. There has been a slight decrease in the amount of equipment loaned to University instructors by the Teaching Aids Laboratory during the past year, which may be explained by the increase in the number of projections scheduled in classrooms and auditoriums. Apparently, instructors are requesting student operators instead of borrowing equipment such as a lantern-slide projector and operating it themselves.

In the past, all films on deposit or located in the Teaching Aids Laboratory film library have been sent once a year to the Department of Photography to be cleaned. During the summer of 1952 the Department of Photography could not handle the cleaning of motion-picture film for the Teaching Aids Laboratory because of insufficient funds for extra labor. Film-cleaning equipment was borrowed from the Department, however, and a total of 350 motion-picture films and approximately 1,200 filmstrips were cleaned, renovated, and polished at the Teaching Aids Laboratory. A new procedure of filmstrip repair with clear acetate 35mm. film has been tested and successfully applied. Approximately 50 filmstrips were repaired by this process.

We are hoping that as a consequence of a thoroughgoing survey of the various services of the Teaching Aids Laboratory by the University Purchasing Department at the suggestion of Vice-President Heimberger, definite funds will be allocated to the Laboratory for the systematic purchase of new films for the University Film Library and for regular purchase of much needed audio-visual equipment for the central equipment pool maintained by the Laboratory.

The University Recording Studio has added a new language listening center for students during the past year. This service gives about one hundred students a day direct access by recordings and earphones to excellent instructional materials. Construction changes in the Studio balcony space to provide for the Center were made by the University Service Department, and special equipment was installed by the Recording Studio technicians, Floyd Heischman and Lewis Schwartzkopf. The Studio staff has designed, constructed, and installed special tape playback equipment to be used in our rapidly expanding tape-recording service. A full schedule of routine disc-recording and of special disc- or tape-recording assignments is maintained for various University departments. Special jobs during the past year included conference proceedings for the Department of Pathology and the School of Nursing, papers and lectures of the symposium held by the Department of Physics and Astronomy, the Bode Conference for the Department of Education, and an operetta for the Department of University Schools. There has been a heavy increase in requests from departments for copy work from tape to disc or from disc to tape. In fact, studio equipment has been taxed to the limit and is greatly in need of supplementation, especially in the tape-recording field.

At the beginning of the last academic year the Curriculum Materials Center was moved to College Road Annex where, for the first time in its experimental existence, there were space facilities, budget, and personnel sufficient to serve students promptly in reasonably comfortable quarters. As rapidly as possible after the move, facilities for ditto copying were added, and elementary- and secondary-school recordings were moved from Pape Hall to the Center, as was the library of textbooks and courses of study formerly maintained at the Bureau of Educational Research Library. Additions to equipment and materials purchased were selected to fill the most obvious needs. Through conferences with faculty members in charge of student teaching and instructors in specialized areas, an attempt is being made to learn what are the most urgent needs, so that additions of teaching materials can continuously be made with reference to them. A case in point is the addition of a tape recorder this year better to meet the specialized need of student teachers in the area of speech. In the same way, a more generalized need is being met by adding a workbench, tools, and basic materials essential for student construction of simple teaching materials.

During the summer of 1952 a two-year evaluation of the Curriculum Materials Center, conducted by a special college committee, was completed. This report served to point up expectations of services by both faculty and students, and weaknesses and strengths noted by both groups. These data, coupled with information secured through conferences with the faculty, are being used to make adjustments for the improvement of services. The report revealed that practically all of the elementary-education students in the College are in frequent contact with the Center during their student teaching, with considerable participation prior to that time. While students majoring in secondary education made less use of the Center, their rapidly increasing use of it has extended the demand for specialized materials.

The contribution of the Curriculum Materials Center to student teaching will be the subject of a doctoral dissertation which Miss Gibbony hopes to complete during the school year 1952-53. From this study may emerge certain recommendations which bear upon the expansion and possible eventual relocation of the Center.

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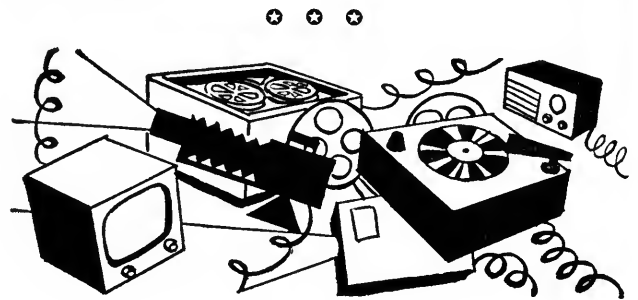
Administering an audio-visual materials center at the college level has certain aspects peculiar to that level. First, what position does the center occupy in the organization of the institution? Generally, it is part of the department of education—a sort of department within a department. This is where it belongs, for it then serves as a tooling center for the entire academic program of the school. In addition to this thought is the close relationship it will have automatically with the teacher-training program. Put these two together and you will have teachers who, when they teach the way they were taught, will be teaching via rich, meaningful experiences that mean better learning in our nation's schools.

Administration of A-V Materials In the Liberal Arts College

By G. C. RUST

THE ROLE OF THE A-V LEADER

Another aspect of this program at the college level is that the audio-visual leader is a colleague with his fellow instructors. He must carry on his work as one of them, or better yet, as a service to his fellow teachers. It is true that he is an academic administrator; however, he never "has the say," but rather,

the "suggestion." Public school administrators in this field may have to be "directive" in manner and practice because of the scope of their work and many times in the interest of efficiency, but the liberal arts college is more of a "family affair."

A third aspect directs our attention to the student. He is more mature, demands more from his instructor, and is much more critical. An audio-visual program to fit this student must be coordinated with the subject matter he wants to learn. It must be "subject-right" and "time-right." When a film is presented to a class following the "exposure" method, some rather sorry results are obtained. Students will openly and constructively criticize such use of audio-visual materials. On the other hand, the "prof" who uses audio-visual instructional materials as tools to teach with usually rates very high in the student opinion poll as to ability and good pedagogy.

Some Suggestions

Someone has said that the little things are the important things. The author has found some of the following little things to be of great value in his own situation. One of them is the offering of a consultation service to instructors for choosing materials. Invite the teacher in to talk over the courses he offers and tell him what is available, describe the service you offer, and show him how your department can make these materials as readily available to him as his own charts or blackboard. Be sure to relieve him of worry about mechanical details.

An audio-visual classroom with built-in conveniences will tend to centralize operations as well as provide a place specifically designed for use of projected materials. This room should be as close as possible, if not adjacent, to the director's office. If adjacent, a projection port in the wall, with a closure, will eliminate the distraction of a machine in the room itself. Classes which meet in this room are pre-announced as meeting there and remain there for the entire period. Thus, there is no wasted time or disturbance.

Regular classrooms where projected materials are used frequently can be wired for sound, thus eliminating the running of speaker cables. An additional refinement, the installing of premanently-set speakers in these rooms, even further minimizes the movement of equipment and its resulting distraction.

The Preview Problem

Films should be previewed before their first use. How to get instructors to do this is a widely asked question. We have this problem, too, but feel it is now well on the run. We have devised a rubber-stamp reading, "preview requested," which is imprinted on the daily reference chart,[1] the teacher's request sheet, and the aid notification slip when an instructor uses a new projected aid. This is the re-

minder. Before the above is done, the director makes a personal date for the preview. This invitation to a joint examination of the film is seldom refused. A valuable, mutually-helpful contact is made between director and instructor. Previews are not, therefore, medicine prescribed for another person—they are enjoyable experiences leading to closer friendships and better functioning of the audio-visual program. These contacts enable the director to ask questions about course aims and content, give him a chance to ascertain what teachers need as aids, and help him to be more intelligently on the watch for new materials helpful to his colleagues in their work. We have found that our faculty members really do appreciate this sort of interest.

One thing of great value to the college program is a photographic darkroom plus copying equipment for making slides. Student technicians usually can be counted on to perform the duties of this part of the program. Specialized teaching materials for certain courses can be quickly and inexpensively produced with this equipment.

Projection of various materials in the classroom is effectively carried out by trained and paid student operators. This puts the whole matter of projection on a business basis. You can ask more because you give more. Some instructors like to perform their own showings, asking only for delivery of the equipment. For these, instruction in projection is given.

What Are the Assets?

A centralized audio-visual materials center has several assets that make it valuable to the college. Perhaps foremost among these is the consultation and planning help the center is able to offer the faculty. Much time-waste and disappointment with poor materials is avoided.

Another asset is the fact that the center becomes a depository of materials and up-to-date information regarding films and services. The film catalogs of the many libraries and producers are organized and readily available for all to use.

The pooling of equipment creates another plus value. Projectors and other pieces of equipment have little time to gather dust when on a schedule. Films and other materials last longer because they get better care. At the same time, they give a much greater return on the money invested because the entire instructional staff has them to use. For instance, our print of the EBFilm *Nervous System* is used by the physical education department, the anthropology department, the biology department, psychology and "pre-med" instructors. In addition, many films owned by the center are also used on our academy campus, which is served by daily truck delivery.

1. Published by Schnepp & Barnes, Springfield, Illinois.

Esprit de Corps

One less measurable but probably more valuable asset is the *espirit de corps* in the classes, ascertainable in the interest and examination papers of the students. Unity of attention, a more dynamic attitude, and less passivity are apparent when instructional materials vitalize the lectures.

One methods class in the teaching of biological science decided, in order to better understand what was back of a film, to produce a short sound film in color showing a dissection. The result was a 2½ minute color film of good quality utilizing a synchronized wire recording as the sound track. The experiment proved extremely valuable to the students, who learned more about how to use a film out of this producing experience than any class lecture could have got over to them.

We feel our audio-visual program is no longer an experiment, but an active "machine shop" providing us with high quality instructional tools.

o o o

In teaching Humanities at Stephens College we have tried to use the many audio-visual materials at our disposal effectively and with imagination. It would be impossible to demonstrate any one lesson as a whole for you today. I can run through some of the devices which have proved most valuable and indicate how we have used each one.

The Use of Audio-Visual Materials in Teaching the Humanities

By
MARJORIE CARPENTER
Address Delivered at
Stephens College Audio-
Visual Conference, 1951.

First, let me make clear what we mean when we discuss our general course in Humanities. There are many interpretations of that word. Our course at Stephens College covers the five major arts: Literature, Music, Painting, Sculpture, Architecture.

Our aim is to help the layman—in our case, the ordinary woman who will move out to establish homes in all states of the union, to know how to approach all of the arts with understanding, appreciation and good judgment. We want to work some changes in our students. They come in with one set of attitudes and we hope that they go out with others. We want to make their mouths water in the right direction. We want to open doors for them so that they can explore new interests all the rest of their lives. It is not a course which is intended to polish them off so that they know everything about a little detail, nor yet a little bit about everything. It is neither the one nor the other. We take most of our examples from the five major arts

because they are the ones which are demonstrable. The dance, for example, we treat when the students have attended the performance of a good dancer here on campus. But I cannot get up and dance for them. They would be sorry if I did, and it would not be a Humanities experience unless it would make possible some negative judgments and show them what is good by contrast!

Inasmuch as first hand experiences are the essence of the course, we *have* to use audio-visual material. We are forced to. It is not just an optional supplement. It *IS* the course. We teach appreciation by giving experiences first, then discussing them.

As I continue with this presentation, it will be clear that there are certain assumptions which we make. First, it takes some imagination to teach Humanities effectively. It helps to have a staff who share experiences and pool ideas. Over the years, our teaching materials have grown because of the sort of staff meetings which Miss Dudley started when she began the course. Also, we believe in using student ideas. Sometimes they present the information for such a unit as medium in the visual arts. Often they make suggestions as to methods which would help them; and always we ask for their critical evaluation of the course content and method of presentation.

Next, it is important that the college itself is interested in keeping abreast of the times with new materials and new techniques. Over a period of years Stephens College has claimed the aid of various boards who have helped a great deal in the building up of our equipment and in suggestions for the wise use of it. All of these assumptions of mine are important: a staff with imagination, an appeal

for student ideas, advisory boards and professional aid in improving teaching effectiveness. Just a group of machines and gadgets will not bring results.

The teaching materials which we use in the Humanities course are multi-sensory aids. They appeal to many senses, often simultaneously. They are used for different reasons. Some help make points clear and interesting. Some are frankly time savers. Some provoke discussion; and some stimulate the student to creative work.

In considering the materials which we use, I shall give a few examples of the use of each type:

FILMS

Films are important in showing processes which we could not possibly demonstrate otherwise. For example, we should like to have our students know how a painter goes about painting a mural. It would not be possible to stand by a painter during such a process. The time element is important. We use a film which shows Thomas Hart Benton painting a mural. Since the original is in one of the department stores in Kansas City, many of our girls can stop off on their way through Kansas City and observe the finished product. After the process has been observed by a viewing of the film, sight of the mural itself is a vivid experience. In this instance three purposes were served at the same time: the process was made clear; the experience of looking at a mural was made possible for all; the original was accessible, and appreciation of it was heightened by the preparation for that experience.

In connection with the showing of all films we prepare mimeographed sheets or "hand-outs." Such prepared material makes clear the important points which the student is supposed to observe. After the student has filled in the blanks, the instructor can correct misinterpretations. The student may not have been observant, or the film itself might have been poor. Lastly, the corrected sheet can be placed in the student's notebook as a better record than notes taken in the dark.

Films are usable in showing other things than processes. There are many rare experiences in the arts. For example, most of us never have a chance to see French Tapestry. We show the film, *French Tapestries Visit America*. This opens a door to students who have not known how tapestries were made or how beautiful the French tapestry is. In a film like this, full of many proper names and much historical information, we do not expect the student to remember all the details. Hence, we hand out a different sort of mimeographed sheet. The proper names are put in outline form and the student is allowed to enjoy the beauty of color and line without straining to remember foreign words and histori-

cal names. The dittoed sheets in this case can be saved to serve as a reminder of the experience of seeing the tapestries; but they are also available for the student studying the culture of France who chooses to review that aspect of the film.

At times, it is important to present a variety of paintings which it would be difficult to assemble. Such a film as *What Is Modern Art?* is not only provocative in its ideas, but it would be impossible to secure all the color reproductions of the various paintings represented in this particular film. We like to begin the year with that film because it raises issues which will have to be faced. The dialogue, for once, is natural and not loaded on the side of modern art. The pretty girl says intelligently the very things which have been vaguely in the minds of the students. The artist is not allowed to win all the arguments. In other words, we have a model discussion as well as a collection of good examples of modern painting, and the stage is thereby set for one of our objectives; changing the students' attitudes and prejudices. We supplement this film with an exhibit of reproductions by the same artists and also with a chart containing the names of the modern artists and their pictures.

There are certain principles of the arts which can be made clear with films. I am thinking of one entitled *Design* and another *Line and Shade*. Information about the elements of the arts is often taken for granted when actually there is need of clarification.

A still different and important function can be served by another type of film. Such a film as *Boundary Lines* coordinates the arts and the contribution of each to the general effect, can be discussed. We have carried on several experiments in the use of this film which I shall explain later. Before we leave the discussion of films, let me say that the present generation sees more in a film than I do. I read better than they; but they take in more through their eyes as a film moves along, than I do.

RECORDS

In the teaching of music, we obviously need record players which can make use of the present long playing records. Before the students go to a concert, it pays dividends to introduce them to at least one of the pieces of music which they are going to hear. Often we accompany it with some "hand-outs" as a description of each of the variation on a theme, which they will hear. In helping those who are not familiar with music acquire a taste for it, the three steps in this process are important: 1. Allow the ear and eye to become familiar with the music first. 2. Listen to all the concert but especially to the one number which was explained. 3. Discuss the music

afterwards with specific references to instruments or rhythms heard. The satisfaction in recognizing the familiar gives them confidence.

Alfred Sterling, a member of our staff, recently made a chart to accompany Revel's *Bolero*. It teaches two points clearly. On one side of the chart he has a list of the instruments. At the top, the variations are numbered. Opposite each instrument there is a code sign to indicate whether that instrument is carrying the melody or the rhythm in each variation. It makes the organization of the music clear and enables the students to identify different combinations of instruments and also to understand time and rhythm as the record is played.

In literature, the use of records which reproduce a play is of great value. This year it was exciting to let the girls hear the Broadway production of Menotti's *The Consul*. Just prior to this time we had had a performance of his opera, *The Medium*, on campus and the students had liked that. They had heard the record before they saw the opera and again heard parts of it after the live performance. This made it possible for them to feel quite knowledgeable when they heard the current opera by the same composer. Learning about up-to-date productions gives a motivation which was impossible before long-playing records of plays were introduced.

I have almost given up teaching Shakespeare unless there is a good recording of the play available. By the time that most of our students wade through the archaic words in a Shakespearean play, they lose all idea of sense. Of course, it is better if they can see drama acted in a live performance, but that is not always possible. Paul Robeson's recordings of *Othello* is a good example. When students hear this they are carried away with the emotions and conflicts in the play and they are not perturbed by the funny words. After hearing the record, they are ready to read and study the play.

In teaching poetry, one of the heights of folly is to let the eye alone take it in. A poet writes things that are supposed to be beautiful to hear. Hearing a poet read his own verse is usually a good step. Students should read aloud to each other; we should read in unison in class; they should hear good recordings. If students hear poetry, the whole mystery of the dactyl as contrasted with the anapest is forgotten, and the hearer is caught up in the beautiful sweep of rhythm, rhyme and sound. The result is a desire to hear more poetry.

Some professors object that this is not a "scholarly" approach. At times when I hear an instructor say that a course is not deep enough or scholarly enough, I think of the teachers I have known who have taught courses that were very deep—so deep,

in fact, that it is as though they had dug a trench and buried the students and left them there. My definition of a scholarly approach is one which first identifies the objectives and then by the most economical and effective way gets that objective accomplished.

SLIDES

Slides are mandatory in presenting paintings and all the visual arts. Painting cannot be taught well with black and white slides. The filing of slides is almost as important as their possession. At the present time, we are using a slide filing system which makes use of sliding panels in which the small colored slides can be stored by countries or ages. This allows for viewing over one hundred slides at one time. They are seen against a white panel against the light so that they can be clearly discerned and easily chosen.

HAND-OUT MATERIALS

I have already mentioned several kinds of materials which have been mimeographed, multigraphed or otherwise duplicated and placed in the hands of students. To me they are an indispensable part of the course when assignments are being made. They can be given out well in advance so that the students can plan their study time and ask questions. We are in the act of working out detailed directions for writing an analysis of examples of each one of the arts. We have samples of good critical analyses. The directions can be kept for future use, even after the course instruction is a thing of the past. I am convinced that the reasons some people do not like some of the best art is that they have not given themselves a chance at it and do not have any specific things to look for so that their attention can be held and their judgment formed intelligently.

Directions for study are similar to directions for good analyses. In connection with architectural styles, Miss Grapes of our department recently prepared two dittoed sheets with little drawings down the side and simple summaries of each type or architecture. They were arranged by centuries and the characteristics were sufficiently clear that when some of the students went on a trip to the east during spring rest, they took these hand-outs with them and returned with post card examples of each type which they could show the rest of the class.

Film questions are extremely important. Samples of the kinds we used to insure that students have accurate information are available for any of you who desire them.

Opaque projectors are useful for showing pictures in books or postcards in connection with just such projects as the one mentioned in which students

present material. We do not necessarily want to make a slide of such material.

PHONOSCOPE

This is a relatively new device which we have not explored to the fullest extent. It is a form of record player which makes it possible to follow musical form. Teachers and students who want to find a place on the record can find it instantly. Good students who wish to make their own outlines of musical form can do so. This year, for example, one student in Advanced Humanities made an outline of Beethoven's *Emperor Concerto* just before it was to be played here in a concert. She made the guide which I could use in class and thereby not only saved me time but learned a lot herself. The equipment consists of a record turntable with two speeds. An arm comes down at the control of a little lever which can be set at the desired place. This regulation of the spot on the record on which the needle will fall is accomplished by means of a scaled thermometer which lights up opposite a guide indicating the musical sequences of importance. The arm can be moved across the record until the light is opposite the exact spot desired and then the lever drops the needle at that place. If a particular theme is desired, the instructor can play it in each form in which it appears before the record as a whole is heard.

Sometimes students who are not musical have difficulty in recognizing themes. It is helpful to ask them to describe the theme or draw a pattern of it with dots and dashes in approximate ups and downs so that their eye and ear are both concentrating on the form and sound of the theme. Once the main themes in a symphony are known well enough to be recognized, the student who goes to a concert is in a position to enjoy the conflicts and repetitions which make up part of the listening pleasure. Charts which make clear the formal organization familiarize the student with the "rules of the game" and mystery is replaced by enjoyment . . .

CHARTS

Charts are also useful in supplementing a film. In teaching musical instruments, we use many aids: a film based on Benjamin Britten's *Instruments of the Orchestra for Young People*, the record of that music, a chart which contains an outline of the instruments in each section of the music, charts which show pictures of the instruments, mimeographed sheets describing the instruments, and a convocation in which the instruments are played by students in the orchestra. If the various devices are used in some process such as following, students really learn the instruments. First, show them pictures of instruments and give the students material describing them. Hang the pictures on the wall where

they can be pointed to while music plays and where students can study them if they desire. Play the record of the Britten music while students look at the sheet which indicates the entrance of various instruments and also point to some instruments whose pictures are before them. Then, either show the film and/or have the students attend a convocation in which the instruments are played. Two days are adequate for a thorough presentation, and the students have no trouble mastering the facts.

TURNOVER CHARTS

When outlines are wanted, the turnover chart is valuable both for allowing the students to help in the process of making the outline and also in preserving an accurate record of the results. One preparation of a chart will be good for the day whereas blackboards have to be erased when the instructor changes rooms. Also a series of sheets on a turnover chart is preferable to one blackboard outline when ideas are best presented one at a time. Directions for a test, material for review for the student who is absent, some catchy slogan to catch the student eye, questions without answers—these are various devices for teaching which the turnover chart makes possible. When students make their own presentations they ask for the use of the chart, and many students are clever at embellishing their ideas with drawings. In outlining poetry or musical form, it is possible to outline as one goes without interrupting the sound of verse or music.

TAPE RECORDINGS AND TRANSCRIPTIONS

Tape recordings and transcriptions are useful for consolidating scattered materials. For example, if you are teaching the different kinds of voices—vocal timbre—this project would necessitate bringing into the classroom twelve volumes of records and you would still have to hunt for the place on each record which gave the exact example desired. We have instead a transcription of a series of examples. Mr. Ashbrook prepared one record which gives examples of the various types of voices and explanations of them. The student has before her a dittoed sheet which tells who is singing and what type of voice is and what the name of the piece of music is.

Similar transcriptions can be made for test purposes. Tape recordings and transcriptions are also valuable for presenting expert opinions of specialists. For example, all of us in the department use this transcription of Mr. Ashbrook in a field in which he is the specialist. Student work can be presented by means of tape recordings. A year or so ago, in the unit on architecture, the students were supposed to do any of several projects, one of which was a radio talk on modern housing which might be used in a community in which people were resistant to new

ideas in building. One student did a good job. A recording was made of her talk and it was sent around to our alumnae clubs which are made up chiefly of young people who are interested in modern housing. It served two good purposes. The students felt that good work was really used and the alumnae had material of value to them.

Let me summarize then the points I have tried to make: There is a variety of equipment: films, records, slides, hand-outs, phonoscopes, charts, turnover charts, transcriptions and tape recordings. The teacher must show imagination in the use of any or all of them. Teachers who pool their ideas and experiences will benefit from the contributions of others. Students can contribute ideas. The college must be up to date and eager to improve instruction which students receive.

At this point, I should like to describe the utilization of the film, *Boundary Lines,* because it illustrates a point about teachers with imagination. It suggested to me that it might be a good idea to try playing just the sound track of the film and see what the students would get out of it, what they would supply for the visual presentation if they were doing it; and then the pictures without the sound track and see what music students would supply. We tried both; and then we tried a third method in which we started with a discussion of books and movies they had known recently in connection with the race problem. It was quite clear they felt that no changes in attitudes came from either. We then watched the film *Boundary Lines* and the students were asked to say why that film might change the observer even though the same person would stiffen against a literal or propaganda version of the problem. The use of distortion, abstraction and the use of the combined arts was then brought out very clearly. These three methods indicate that there are an infinite number of ways in which a teacher can use any one device; and I also hope it underlines the fact that our objective is to change attitudes and help students form judgments about the arts.

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Everybody in the class recites at the same time, and all through the hour. Sounds like bedlam? No, it sounds more like the Tower of Babel, for they are speaking a foreign language, or even several foreign languages if they happen to come from several classes.

The Power of Babel

By ELTON HOCKING

It is a muffled Babel, however, for each student has his own semi-soundproof booth. He does not hear the general babble because ear-phones shut it out and bring only the language he wants to hear. The recorded voice he hears is punctuated by frequent intervals of silence during which he replies, speaking into a microphone. His response, like what he has just heard, is recorded on the magnetic tape in his instrument, and simultaneously (through earphones) he hears himself as others hear him — a strange and chastening experience. At the end of this exercise in give-and-take — or rather, take and give-back, he rewinds the tape and plays it to himself, this time hearing "his master's voice" and his own imitations or responses, in constant alternation. It is a unique opportunity for self-criticism and improvement, with none of the self-consciousness or embarrassment caused by public performance.

AUDIO

This individual yet class-wide activity in oral-auditory drill is basic in Purdue University's new foreign-language laboratory for elementary classes. Twenty-eight booths, each equipped with tape recorder, earphones and microphone, can all operate in series with the master instrument at the front of the room. From this "master" the earphones relay the audio materials, whether from tape, disc, radio or the instructor's living voice. With his own earphones and jack, the instructor can monitor the master instrument (and his own voice), or, from switch boxes in the center aisle, the tape and responses in any booth. By means of these same switch boxes he can cut out any booth so that it will operate independently or as a master control for a variable number of its neighbors. In this way, using each of the six rows of booths as a unit, it is possible to have oral-auditory drills in six different courses or languages simultaneously. For mere listening, all twenty-eight booths can, of course, operate as separate units.

VISUAL

Two projectors are also used, an opaque projector and a "Speedreader." The former serves chiefly, in second-year classes, to stimulate and focus conversation by projecting pictures (usually from current magazines) carefully chosen to correspond in vocabulary with the lesson at hand. The movable arrow of bright light serves to pinpoint the details and to remove vocabulary drill from the abstractness of

bilingual equations (table = *Tisch*) to the visible world where each foreign word comes alive in the picture. The English word is not even mentioned.

The Speedreader is less familiar to most teachers. A simple projector with no shutter, it throws a text which moves gradually upward on the screen, giving the effect of the scroll title at the beginning of an entertainment film. The operator can set the Speedreader to show simultaneously any number of lines of print, from one to ten or twelve, always rolling upward and disappearing at the top of the screen, or the text may be "scanned" in the manner of the Harvard films for English reading. Any desired speed is available, from very slow to very fast, and the film can be stopped or restarted instantly. Projection does not require complete darkness: enough light can be maintained to permit short written exercises at intervals.

AUDIO-VISUAL

Our purpose in using the Speedreader is not merely to control and develop speed in silent reading, but also to insure that the beginner in German, for example, learns to "hear" the correct German sounds and information when he reads silently. All so-called silent reading is accompanied by sub-vocal activities of the speech mechanism. When a literate person starts to learn a foreign language, he naturally tends to transfer to it the sounds of his native tongue. The Speedreader, along with the audio equipment, helps to overcome this tendency to "pronounce silently" the foreign language as if it were English.

A page or story in the textbook is first put on film. Then the instructor, in advance, projects the film at the desired speed, and reading aloud from the screen, he records it on tape. When the class meets, the students read the text on the screen while they hear the same text coming through their earphones. This is the basic multi-sensory approach.

Variations of this technique include: (1) Repeated showings of the same text, each at a greater speed and accompanied by a synchronized tape: (2) (After considerable familiarity with the audio-visual presentation), alternation of the visual with the auditory, the students being encouraged to "supply" the missing imagery from memory. (3) Brief pauses in the audio-visual presentation, during which the student writes and/or records on tape the sentence that he has just seen and heard. Thus three or four senses are involved. (4) Pauses in the audio-visual presentation during which the student writes and/or records original responses to what he has just seen and heard. (5) Visual presentation in German accompanied by auxiliary English translation. (6) Visual presentation in English accompanied by auditory German equivalent.

No doubt there are other variations that have not yet occurred to us. The possibilities are many, and comparative values will not be known for some time since we are in the first semester of this technique. Scientific evaluation of results is being made under the direction of the Division of Educational Reference.

The audio-visual equipment has been installed by Purdue in recognition of the fact that elementary foreign language is more a matter of practice and habit than of knowledge. Unlike most academic subjects, language is less book learning than a skill, like performance on a musical instrument or in sports. Everybody knows that good performance in basketball or swimming takes constant practice under the watchful eye of the coach and that only practice makes perfect.

It is obvious everywhere that little children learn English (or any other language) by imitation and practice before they learn to read. But only recently has it begun to be generally recognized by educators that, with language as with swimming, you have to plunge in and get wet and practice. "Hang your clothes on a hickory limb, but don't go near the water" has been the traditional attitude. And the textbook has been the hickory limb. But modern A-V aids are changing all that. The language laboratory provides each student with a private pool where he can overcome his fear of the water, imitate the example of his coach, and devolop the coordinations and habits that are possible only through such intensive, supervised practice. And with the instructor as coach, practice makes perfect and drill makes skill.

Purdue does not claim or aim to produce conversationalists in twelve semester hours, for that is impossible. We do aim, however, to provide the maximum amount of practice in the skills of comprehension: hearing and reading. Properly facilitated and integrated by A-V equipment and materials, these skills will meet the probable needs of most students and form a good basis for free conversation and writing for anyone who wishes to develop them.

The cost? About $15,000 for all equipment and installation, including also a soundproof recording room not mentioned above. This figure may frighten language teachers who traditionally have been "equipped" with only a book and a blackboard. It will not frighten administrators who buy equipment for physics and chemistry laboratories and for football teams. Compared to these, the cost of the language laboratory is trifling. Amortized over a ten-year period, it comes to about five cents per student hour of use, plus perhaps two or three cents for supplies and a part-time service man.

Our high schools and colleges take it for granted that each student needs his own textbook. Magnetic

tape can now do for the spoken word what the printing press has done for the written word, and at comparable cost. Foreign language study especially can benefit from this new medium. Learning language from books alone is a deaf-and-dumb process; language remains mere dead letters. But sound brings language to life, and life to language. And the importance of bringing life to language and to foreign language study cannot be overestimated in these days of urgent need for intelligent and sympathetic communication between peoples the world over.

<center>O O O</center>

The technique of making an effective teaching film is simply the method or technique of making an experience educationally significant. In terms of textbooks, lectures, television and radio broadcasts, maps, charts, filmstrips, photographs, exhibits, and other teaching materials, the problem is the same. It is a problem of design in exposition.

Design in Exposition

By
ROBERT W. WAGNER
The News Letter, Vol. 16, No. 3, Dec., 1950. Pp. 1-4.

"The systematic study of design in exposition is one of the most strangely neglected fields of educational inquiry," says the *Harvard Report on General Education*. While it is true that there is no blueprint for the construction of educationally significant books, films, or other teaching materials, we do know the important elements of the learning process itself, elements upon which our design in exposition must be based.

ORGANIZATION

One of these elements is *organization*. An educationally significant experience involves the arrangement of ideas, facts, or events in a purposeful order or pattern. "An experience has unity," says Dewey. "The existence of this unity is constituted by a single quality that pervades the entire experience in spite of the variation of its constituent parts."

A successful motion picture, an effective television broadcast, are highly organized forms of communication. These media have unique characteristics enabling the producer to present experiences in a logical, realistic, and memorable way. By means of long shot, medium shot, and close-up, the scale of observation is quickly changed from the gross to the detailed and back again in a way that concentrates the attention of the learner immediately on the important points. The subject may be explored in great detail, yet the detail in the form of bits of film or electronic impulses is organized to create a unity, "a single quality that pervades the entire experience in spite of the variation of its constituent parts."

In the production of a high quality teaching film, this organization has been put down on paper, discussed, revised, and refined before a foot of film is shot. Errors in content and presentation are ironed out, and the entire project is planned in detail with the learner in mind. In film, television, and radio terms, this is the script state. In the preparation of charts, posters, exhibits, or photographic picture stories, it's called "layout."

Organization implies not only a clear and memorable arrangement of information, but also an arrangement, of that material by experts. In preparing Volume I of his series of recordings, "I Can Hear It Now," Edward R. Murrow spent nearly two years organizing his material out of more than five hundred hours of old broadcasts.

The *Picture History of World War II* published by *Life* Magazine is the editorial organization of the wartime work of more than a hundred photographers, artists, and correspondents. The effectiveness of films, recordings, and picture books such as those described is due, at least in part, to the fact that their design is in accord with known principles of learning, one of the elements of which is organization.

SIMPLIFICATION

The *simplification* of material to the level of the learner's understanding is a second element of design in exposition. Simplification is an absolute necessity if we are to understand even the more basic facts about the world of today. We can't all be experts on the internal combustion engine, but we should at least know how the power generated by that engine is transmitted to the rear wheels of our automobile.

We should know something of contemporary art, music, drama, and literature. Certainly we should be aware of the basic political issues in our local, state, and national scene. We should be informed of the work of the United Nations. And since we should know something of many facets of life, we cannot hope to be expert in all of them.

Our need for brief, informative, simplified materials to keep us abreast of the times has led to the popularity of such publications as *Life, Time, Newsweek*. News summaries via radio, and television newscasts such as the syndicated "Telenews" program, are an important source of information for the average citizen. The motion picture is effective in this respect because it leaps barriers of time and space, overcomes language handicaps through its visual imagery, and abridges and reduces complex experiences to a common denominator of understanding.

Simplicity is more than sheer brevity. It's a matter of making things clear, distilling the essential

meaning of an experience. The development of a frog's egg, for example, is a slow process requiring observations over a period of several weeks. Yet the important thing is not the time it takes to develop a mature frog, but an understanding of the process of cell division and biological development. The time element is a barrier in this case.

Accordingly, The Ohio State University produced a motion picture, "The Development of a Frog," in which the time involved in the development of the animal from fertilization to maturity was condensed into a period of ten minutes. Individual pictures were taken automatically at predetermined intervals, with time-lapse equipment controlling a motion picture camera which took views of the developing egg through a microscope. The result is an organized, simplified version of a complicated process hitherto never before seen as a whole by the student of zoology.

The motion picture and other teaching materials designed for simplicity open themselves to criticism as being "incomplete" or "oversimplified." Yet is any experience really ever complete? As for oversimplification, we know that while it is unwise to talk down to the learner, it is even worse to talk above the limits of his knowledge and understanding.

Simplification, in the sense used here, is possible only to those who deeply understand their field. It is not within the capability of the pedant, confused and sidetracked by the irrelevant and the detailed. The expert in simplification can clearly organize and effectively state the important facts of what may be a complicated matter. It is for a Hendrick van Loon, a H. G. Wells, a James Truslow Adams. It is for the educational architect.

AMPLIFICATION

While simplification connotes the ability of a presentation to reach people mentally, *amplification* may refer to the ability to reach people physically. This is a third element in our design in exposition.

An educational experience is one in which groups of people reach common understandings, in which common ideas, techniques, or information are communicated. The role of language, books, film, radio, and television in mass communication needs little description. But in addition to the ability of these media to bring common understandings to large audiences, they also amplify ideas through what might be called massiveness of impact.

The motion picture audience sits in darkness, which eliminates most distractions. The image is projected onto a screen whose size may range from six to sixty feet in diameter. Here, a frog egg (act-

ually one-sixteenth of an inch in size) is enlarged to massive proportions. The buzzing of a mosquito may be amplified a thousand times on the sound track. A minute gesture such as the wink of an eye, the relaxing of a hand, becomes significant in an extreme close-up.

The factor of sheer size in communication is demonstrated again and again. Photographic salons have standardized print sizes as 16″ x 20″ because, quality apart, the large prints were found to be at a great advantage over 5″ x 7″ prints. Perhaps for the same reason, 87 per cent of television set sales in September 1950 were of picture tubes sixteen inches or larger.

We like to look at large posters, see large, well-organized exhibits where the one big idea is understandable at a glance. Billboard advertisers recognize that we are all attracted to large, simple illustrations free from detail, illustrations that can be read from a moving automobile.

The application of this principle in the design of educational materials can be seen in exhibits such as those at the Cleveland Health Museum where the functions of the human body are amplified in the form of a giant glass man, inside of which the circulatory system and the various organs of the body are clearly traced. In the same museum, the sounds of a human heart are amplified to the audible level, the diastolic and systolic beats clearly audible through the room in which exhibits on the heart are displayed in broad, bold drawings, models, and charts. Through such amplification, the powers of human observation are enlarged, and attention of whole groups of learners may be directed to a common image leading to common understanding.

DRAMATIZATION

A fourth factor in any design for exposition is *dramatization*. While simplification of an idea helps reach people mentally, and amplification of the idea helps reach them physically, dramatization means reaching people emotionally.

Jean Benoit-Levy, former director of UNESCO's film program, once said, "The heart must be touched to educate the man." Dewey talks of "the passionate intelligence." Certainly, when problem situations are dramatized, when issues are made sharp and clear, when ideas are put in conflict, an atmosphere for thought is created. And while films, television, and other similar teaching materials can promote common understandings, they can also create a climate of ideas in which questions are raised, doubt created, and conflict enjoined. This is the stuff of drama. This is escape from the stale and often artificial academic atmosphere into the field of vital human problems.

The well-made factual film with the impact of drama gives the individual the identification with his fellow beings often lost in everyday living. "Grapes of Wrath" acquainted Americans with the Joads among us. The paraplegic in "The Men" became an understandable character in the current scene. The evil of race prejudice was made poignant and real as the audience identified itself with the Negro in "Home of the Brave." Personalities and events in history can be brought alive in dramatic reconstructions, such as the CBS series "You Are There."

Effective communication requires, first of all, a plan, a design for exposition. This remains "one of the most strangely neglected fields of educational inquiry." We believe that when experiences are organized, simplified, amplified, and dramatized, they may be made educationally significant. These elements may be part of a real design for learning, a pattern which must be, at last, considered by teachers and experts in communication alike. When so considered, we may find that a whole new field has been opened, a field whose leaders will be educational architects with the single important job of creating designs for exposition.

☉ ☉ ☉

My topic is sight and sound in the world of books, the role of audio-visual materials in libraries. What I have to say, unfortunately, would be better spent on some other audience, because most of you are already convinced that audio-visual materials do belong in libraries. The librarians who are not convinced—may the Lord make fewer of them—do not attend audio-visual workshops. But it is imperative that we keep on talking, even though only to ourselves, in the hope that, one by one, the uninitiated will eventually hear us.

Sight & Sound in the World of Books

By
RAYNARD C. SWANK
Library Journal, Vol. 78, No. 16, Sept. 15, 1953. Pp. 1459-1464.

If any true doubters are within hearing distance now, let it be understood at the very beginning that we do not wish to detract one iota from the greatness of the printed book, or of the illuminated manuscript before it. We are first of all librarians, and to all our profession books are basic.

The soundest and truest audio-visual enthusiasts I know are also book-lovers — those who cherish books for the good they do to people and who transfer their enthusiasm to anything else that does a similar good to people. Goodness is no vested interest. There is no additional glory for either books or audio-visual materials in the depreciation of the other. I have no patience with the fanaticism of either bibli-

ophilic or audio-visual sectarians who can see no good in the works of the other and who seek salvation alone.

It is difficult to discuss audio-visual materials sensibly because of the stigma attached to the word. It is a controversial word, and the very sound of it raises the hackles of many good people, who, I firmly believe, have no real objections at all to the proper use of the materials themselves. Somehow, the word summons a whole host of prejudices, misconceptions, and malignancies which effectively block all further understanding. Consider the phrase a moment: Audio-visual materials! Can we blame any sensitive soul for distrusting the mechanistic imagery which it calls to mind?

POPULAR PREJUDICES

Before we consider the role of audio-visual materials in libraries, let us clear away a few of those prejudices and misconceptions — a few of the more popular fallacies.

The first is easy; that is the tendency among people predisposed against films, radio, or whatever it may be, to compare the best in books with the worst in audio-visual materials. You have heard people say, after seeing a questionable TV program or cartoon, "See what I mean? I'd rather settle down with a good book any day." Such people forget easily that a large part of the books printed today are at least as questionable as the worst in films or TV. Perhaps they have never seen a good educational film. You can't argue with such people. They have to be shown.

When Lester Beck, back at the University of Oregon, decided it was time to sell me on the role of films in the university library, he did not argue with me. He invited me to dinner and casually screened a few top-notch films for after-dinner entertainment. I began to ask questions. Were there other films as good as these, and where could I go to see them? The next time I went to an ALA conference, I searched out the audio-visual committee and attended its meetings. I've been attending them ever since.

But to this day, there is still no place around my home town, absolutely no place, where I can see the good new educational films. Most librarians have never seen any, and that is half the trouble. Within the limits of their present knowledge, the only thing they can compare with a good book is the commercial movie, TV, or radio. If comparisons must be made, and I doubt that they ever need be, let us compare the best of both — story with story, social study with social study, travelogue with travelogue. And if both are found good, who cares which is the better?

Do Not Blame the Media

A second fallacy is the tendency to blame the poor quality of many audio-visual materials on the nature of the media themselves. This misconception usually takes the form of disparaging remarks about cellophane, or vinylite, or electronic tubes, or loud speakers. How could anything born of the false gods of technology be expected to be any good? Paper, printers ink, and even library paste, on the other hand, are wonderful. As a matter of fact, the printing press and paper-making are as much the products of technology as the color film. Quality comes from the sensitive and artistic use of whatever medium is chosen. If the educational films with which we are familiar do not measure up to our standards, let us put the blame where it belongs—on their creators—and try to interest better artists in the creation of better films.

A third fallacy is that books are richer in spiritual and intellectual values than the audio-visual media. Books demand thought and sensitive awareness of the reader; they are capable of penetrating our innermost experiences. The audio-visual media, on the other hand, are immediate, sensuous, and superficial; the audience is passive and uncritical. Again, let me say, *some* books and *some* audio-visual materials! Many trivial books are read passively and uncritically, and at least a few films, radio programs, and recordings — enough to demonstrate their potentialities — have stirred audiences at high intellectual and spiritual planes. The fact that films can be used so provocatively at forums and other meetings where audience participation is desired should satisfy any further doubt on this point.

The fourth fallacy is that audio-visual materials are strictly mass media, while the book is an intimate and individual medium. The film, the radio, the recording, and the slide are conceived as productions inflicted upon large groups of people who are swayed in unison by whatever message the producer wishes to put across. This may well be true, but the masses are still composed of individuals who can accept or reject as they please. The experience is still personal. Also, I am not certain that a much different effect is achieved by the mass distribution of popular magazines or pulps, the contents of which are determined by the publisher.

More important to us, however, are the educational uses of audio-visual materials by individuals or small groups in the library, the classroom, or the community organization. This is where one of our most important responsibilities to education lies, and this is not mass communication. The slide, the recording, and the film, even the radio and TV program as recorded for future use, as the printed word.

At the same time, we should of course take advantage of every opportunity to reach the masses with good audio-visual productions, as well as with good books.

No Conflict Exists

The fifth fallacy is that audio-visual materials are embattled against books — that the world of books is antithetic to the audio-visual world, and that a struggle to the death is in the making. People don't read anymore; they go to the movies or watch TV. Pretty soon there won't be any readers, and then there won't be any books. The superficial, the trivial, the quickie types of entertainment, which demand nothing and offer nothing, have so far won the day. The library world, the publishers, the booksellers, and all true book-lovers everywhere must join forces to save the book, and thereby humanity.

There is enough truth in that position to keep one awake nights; yet the problem is not so simple as fighting a battle of books against audio-visual materials. The two are not antithetic, though the best in books and the worst in audio-visual materials are symbolic of two conflicting aspects of our culture today. The same conflict is symbolized, though less dramatically, by the best in audio-visual materials and the worst in books. What they symbolize is our common struggle against the human compulsion in this age to be educated and entertained on the run. This quickie, capsule culture is manifest not only in the popularity of the mass audio-visual media but also in the periodical digest, the picture magazine, the book condensation, and the compendium of the world's knowledge. It is also manifest in the conversations of the cocktail hour, the bustle of commuter suburbanism, and the razzle-dazzle of our summer resorts. It may even be manifest, just a teeny bit, in that especially alluring capsule, the Great Books. It is ourselves who are embattled, not just books, and one of the sorriest, least noticed, but most valiant allies we have is the small, educational film producer, who knows that films can be better and who is dedicated to making them better. Another is the film society which encourages the development of the film as an artistic meduim. If you think book-lovers are in a bad way, you should take a look at those heroic people. They are fighting the same battle, but without half a millenium of experience behind them.

It may be true that people who go to movies and watch TV read fewer books, but I am not yet ready to believe that the people who watch poor movies or poor TV read fewer good books. It seems more likely that the immediate competition is between poor books and poor movies, both of which appeal to undiscriminating minds, and that the thoughtful and

discriminating reader will be equally choosy about his audio-visual fare. Again, the enthusiasm generated by either a good book or a good film is readily transferred to the other — more than that, the one encourages the other and gathers strength from it. In the last analysis, this is not a battle of the media for men's minds; it is a battle of men's minds, fought with every kind of medium.

The last fallacy is the tendency to ascribe a kind of unity to the audio-visual field, to regard it as a single type. I referred earlier to the unfortunate character of the phrase itself, audio-visual materials, because of the mechanistic imagery which it evokes. The phrase is equally unfortunate because it lumps together in our minds a large number of widely different media. Here are some of them motion picture films, records, slides, television, maps, pictures, filmstrips, and radio. Actually, this conglomeration is not a type at all; it is simply everything but the printed word.

Some of the so-called audio-visual media, moreover, those capable of being printed on paper, have always been associated with the printed word in the book. It is hard to say, for example, whether illustrations and maps fit more comfortably with books or with slides and filmstrips. It is also foolish to argue such a question. On the basis of content and educational purpose they belong in both places.

Content and Purpose Are of Prime Importance

This leads me to the most important point I want to make. Instead of emphasizing the mechanical separateness of the various media — instead of imagining conflicts between them — we should, I think, as librarians, concern ourselves with the content and educational purposes of all of them. If we do not think in terms of content and purpose, we will unhesitatingly relate books with films, slides, or recordings whenever they supplement each other, any place in the library. We will consciously use them together. Let me illustrate what I mean.

Many of us read poetry. In print poetry is literature, certainly one of the highest forms of literature. But poetry is not just literature; it is also, as one of my colleagues defines it, memorable words. The best poetry needs to be heard as well as read in order to grasp fully its emotional quality and technique.

Not so long ago I read several of the longer poems of Robinson Jeffers. As soon as I begin to feel the movement of the lines, I slowed down and read aloud. Then I wondered how Jeffers would read them — what kind of voice he has, where his accents would fall. They are strange poems; their meaning is not at all clear to me. I wanted to know more about Jeffers — his personality, his way of life. I wanted to walk over his countryside and watch for myself the storms beating on Point Sur. Of course, I could not. But second best would be to find in the poetry room of the Library not only the printed text of Jeffers' poems but also recordings of his own readings of these poems. I would like to read, to listen, then to read again. I would like also to find there pictures, slides, or even motion picture films of Jeffers and his countryside in addition to the more conventional biographical data.

Rich Experience Needed

The point is that all these media, when taken together, contribute to a richer understanding and appreciation of the poet and his work. A great many recordings of the living poets are already available. Harvard, especially, has acquired an outstanding collection.

If poetry is not just literature, neither is the story nor the play. A good story needs to be told as well as read. We do still read stories aloud to children; it would be a good thing if we read aloud more as adults. Again, the recording can help us, and can such well conceived motion picture films as *Quartet*, *The Ox-Bow Incident*, and *Of Mice and Men*. The Stanford Library achieved a very happy experience recently when, for one of its Intermezzo programs, it displayed and publicized the book, *The Ox-Bow Incident*, and then showed the film, with the author himself there to talk informally about both works.

The play, even more than the story, needs the aural and visual record, because it is written to be performed, and the performance is heard and seen by the audience. Years ago, after attending a performance of Robeson's *Othello*, I bought the phonograph recordings that Columbia put on the market. No reading of the text alone can now recall to me so vividly the Moor as Robeson's words. Better still would be a sound film of the production — such a film as *Henry V*. If this is not so, then why should a play ever be produced? If it is the play itself that we would teach, not just the text as literature, then our drama collections should be supplemented as fully as possible with films, recordings, slides, and pictures, and the wherewithall to use them — not off somewhere in an audio-visual center, but in the same room with the books.

In the closely related field of speech, the aural record is a great aid to the book for studies of interpretative reading, oratory, and dialects. I note that at Stanford, the recorded speeches of Franklin D. Roosevelt, for example, are used by the speech classes. Similarly, in the study of foreign languages,

if the objective includes conversation as well as reading, the value of the recording is apparent. In all these cases, the uses of the book and of the audio-visual media are intimately related because the content and purpose are essentially the same.

Visual records in the field of art and aural records in the field of music are so obviously important that it is difficult to understand why it is still necessary sometimes to argue the point with librarians. The subjects by their very nature are visual and aural. Fortunately, in both of these fields, librarians have moved much farther toward the integration of audio-visual materials with the book collections than in the fields of literature and drama. Many of our music libraries do have excellent record collections, and many of our art libraries have excellent slide and picture collections. May we soon do as well in some of the less obvious fields.

The Social Studies

One of the less obvious fields is social science. Here more has been done with the film than with other audio-visual media, if radio and TV are excluded. The sensitive and thoughtful documentary film can vividly portray how people look, feel, and act. This sense of immediate reality is especially subject is totally unfamiliar to us. I think of Julien Bryan's film studies of the people of china, Japan, Yugoslavia, Russia, Britain, and other countries — intimate studies of personality and family life. A few outstanding anthropological documentaries have also been made. We Americans, for all our books, are deplorably uninformed about other peoples in the world. We should read a lot more about them, and see as many films as we can in addition. That educational TV can also help was demonstrated this year by Stanford's popular TV series on *"People, Places and Politics,"* over San Francisco's station KPIX. I think also of the increasing number of film studies of family and community problems, of abnormal psychology, of industries, and of institutions. I do not say that these films are better than books, but I do say that they are good. I would like to see the social science departments of our libraries crowded with such films as well as with books — the film *Brotherhood of Man*, for instance, in the same department with the pamphlet *Races of Mankind*.

History is still less obvious, I suppose, because we can't see the forest for the trees. No group of scholars that I know is less interested in audio-visual documents than the historians. Maybe the real reason is that, unlike diaries and newspapers, our audio-visual records of social and political events, of customs, peoples, and institutions, are not yet old enough to have been discovered for historical pur-

poses. Quite recently early photography has attracted some serious historical interest, but the full richness and variety of the documentation of this age has not yet risen to the surface of the academic consciousness. I have no doubt that the written record will remain of the greatest significance, but it need no longer stand alone.

Even in the fields of philosophy and religion, in spite of the contention that pictures and voices cannot penetrate the recesses of the mind and spirit — a contention which I think is absolutely wrong — films and recordings are useful. Several weeks ago the Stanford Library in cooperation with the University Church presented the French film, *God Needs Men*, at an Intermezzo program. The reaction surprised and pleased us all. For days afterwards students called at the Vestry Library to comment, or seek comment, about this film. There is no doubt whatever that the film did raise in a most provocative manner a number of basic spiritual and ecclesiastical questions, and raised them in living terms. A passive, uncritical audience would have been impossible. Such a film, I am certain, would stimulate thoughtful reading. It belongs with good religious books.

Examples could be multiplied in a number of fields. In each case, where audio-visual materials have common cause with books, they do belong together — in our libraries, in our schools, in our homes. There is no battle between them; neither detracts from the other. They are allies in the common struggle against all that is shoddy, commonplace, or superficial, whether in books, films, magazines, or TV.

One more point now, a practical one. A while ago I said that audio-visual materials are not a single, separate type of medium, but a wide variety of media serving all kinds of purposes. These media, as I think I have demonstrated, are more closely related functionally to books that serve the same purposes than to each other. Thus a recording of Robert Frost reciting his own verses is more akin to the printed text of those verses than to a motion picture film on the rearing of children. There is a lesson in this for us who think of ourselves as audio-visual specialists, prepare courses for audio-visual instruction, and attend audio-visual workshops. We are not a separate profession and we ought not isolate ourselves or our work.

We have come to think, for example, in terms of audio-visual centers, either inside or outside the library organization. These are centers which handle all kinds of audio-visual materials in an atmosphere dissociated for the most part from books. I have promoted audio-visual centers as vigorously as anybody, but in the last few years my ideas about them have been modified somewhat. My present

feeling is that they should be primarily administrative units to maintain and expedite the use of the equipment which encumbers the field and to operate photographic and other laboratory services, but that the collections themselves and the facilities for their immediate use should be associated as closely as possible with the related book collections. We should not permit an isolated audio-visual library to arise within the public library or anywhere else, unless unavoidable circumstances, such as the nature of a library building, dictate a separate arrangement.

This is a very important point that needs careful analysis in each local situation. I am sure by now that I have retarded audio-visual development at Stanford by insisting upon a center, whereas individual projects in their regular library context, such as drama films in a drama library and poetry records in a poetry library, can be sold quite readily. We are working now at Stanford on reference services by our regular reference staff, on film rentals, and on the development of individual audio-visual col-lections wherever they fill a recognized need. When the technical problems become too difficult to be managed in this way, there will be time enough to set up a central service.

If there is any real unity in the audio-visual field it derives from the gadgetry, the mechanical appurtenances necessary to use of most audio-visual materials. I think we should minimize this aspect of the work as much as possible, keep it out of sight. The less conscious people are of the apparatus, the better. We give people not wax, not photographs, but the spoken word — the poem, the story, the drama told aloud. We give them not film, not projectors and beaded screens, but the vision of life recreated for their pleasure and understanding. These are the things that books are made of too, and therein lies real unity. When sight and sound are fully accepted in the world of books, when the unity of content is fully recognized, we will have better libraries, better readers, and better people.
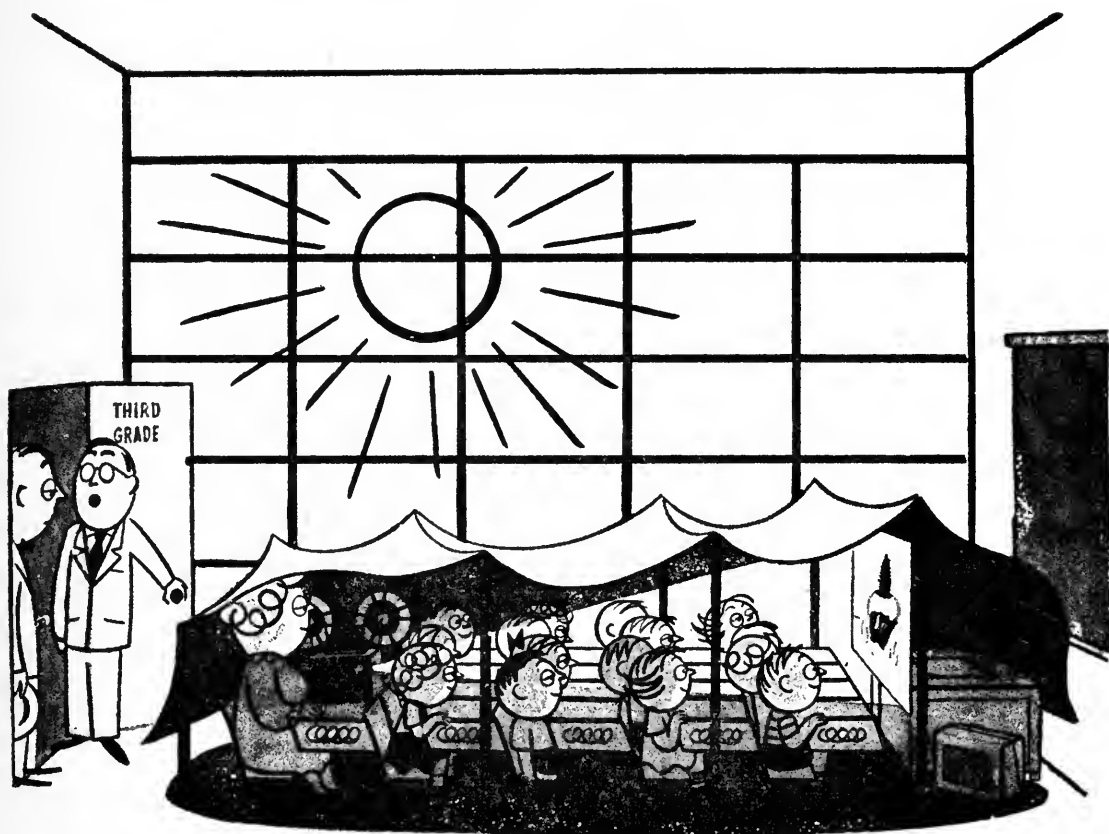
by Drucker
for YOUNG AMERICA FILMS

"...and we've spared no pains to bring the sunlight into our new classrooms."

A. DEPARTMENTAL ORGANIZATION: STATE-COUNTY-CITY-BUILDING

(1) State.

A state bureau of audio-visual education functions within the overall philosophy and program of the state department of education. Thus, the state program of audio-visual education may fluctuate, with varying emphasis from the entire state department. However, all activities contribute to and improve instruction so that our youngsters will have the advantage of the finest school experience possible.

Functions of A State Bureau of Audio-Visual Education

By FRANCIS W. NOEL
In, Harcleroad, Fred, and Allen, William, Audio-Visual Administration. Dubuque, Iowa: William C. Brown Co. 1951. Pp. 14-16.

Audio-visual education helps education on all levels. It works equally well from the cradle to the grave, and for all areas of instruction — for elementary schools, secondary schools, college and business areas and rehabilitation education. There is no one particular area which is served best.

Let us also remember that through a state program of financial support, which we have in California, we are able to help equalize education by providing audio-visual instructional materials. Children and teachers in the rural counties and isolated mountain areas need these materials to help instruction even more than do those in the city. If you should look at the budget allocations to various counties, you would find in some of those places they have what would seem to be very high AVA support. One little county on the east side of the Sierras spent about $6.00 last year per youngster. It sounds like a lot of money, but it is not in terms of their needs. Last year, in the State of California, we had approximately $1,400,000 for support from the State Treasury. We had perhaps another million dollars from local tax funds. Added together these equal between $2,500,000 and $3,000,000 for audio-visual education in the State of California. Assuming approximately a million and a half youngsters in the state public schools, we spent about $2.00 per youngster. If you happen to work in a state where there is no such program, the first job is to help the leadership provide equal opportunities for everyone.

A bureau of audio-visual education in a state department must be placed within the administrative segment of instruction, with secondary education, elementary education, adult education, and other similar fields. This must also be true on the local level since it is a basic part of curriculum and instruction.

The first function of the bureau of audio-visual education grows out of the fact that an office was established in Sacramento. — When the office was first established, many superintendents said, "that in the past they had not done much with audio-visual education, but now they could go ahead since the state board of education had created an audio-visual office in the state department." It gave the whole movement a certain status that was important. One of our biggest jobs is to be a friend in court, creating the kind of climate in which teachers, supervisors, and administrators in the field can move forward to give the kind of services in audio-visual education that will help implement and improve instruction.

Second, the bureau has a number of functions on the state level with reference to the state department of education which are comparable and similar to the function of a local director to the public schools in his area. — One of them is to assist other members of the staff in the utilization and selection of audio-visual education materials. To render that kind of service to the state department of education obviously requires personnel that knows the curriculum.

The bureau also provides the equipment and the material that the state department staff can and should use. For example, when the state department of education was re-organized, the state superintendent used a series of lantern slides visualizing that re-organization. We noticed the effect up and down state immediately. People in other branches of the state government — highways, finance, trade, industry, vocational rehabilitation, social welfare, and so on — requested equipment also and have come to us for help. We give that help and consider it an essential part of our services.

All state departments of education should have facilities for graphic arts and photographic reproduction to help visualize specialized problems that come up on a state level. This is not to create a big produc-

tion program. It is important for developing materials to use in meetings throughout the state.

A third function of the bureau is to get materials produced which will help to improve instruction in the schools.—There is quite an argument whether the bureau should produce the materials or seek to have others produce them. Seriously, we question whether a state bureau should go into a production program. Such a production program is a pitfall in its consumption of time, its finance, diversion of attention and interest from the larger job of general leadership. Other agencies are in much better position, both practically and logically, to do some of that production. It is much better to get private enterprise concerned and interested in producing these things.

The state office spends a great deal of time with producers, helping them produce materials needed in education. One of the jobs, in fact, specifically set up in policy by the state superintendent is that the bureau shall work not only with the commercial film producers but also with people representing other industries, to help unlock a wealth of material for instruction that those people are willing to produce on a subsidized or free basis.

Fourth, advisory services are available to local areas, but they must be requested. — We do not go into a community that does not want us. The professional staff of three people traveled 55,000 miles last year, up and down the State of California, trying to give the services requested. The questions and problems posed covered all areas of education — curriculum needs, finances, the teacher education program. One big job is to advise with the chief state school officer in charge of finance with reference to the audio-visual education budgets. We do not approve or disapprove the budgets. We work with the review committee, and defend those budgets. Two years ago that part of the submitted $1,000,000 budget which we defended was passed to within $10,000.

The fifth function is recommendation of personnel, never specific persons but several people. — We point out to the county or city superintendents requesting such assistance that our responsibility is to screen applicants. The bureau has a large applicant file from all over the United States and serves as a clearing house for personnel.

A sixth function is to help develop strong state professional organizations. — Here in California we have a very strong state association, composed of a number of local sections in the bay, San Joaquin, northern, central coast, and southern areas. Everyone is encouraged to join the regional and state associations. Everyone also should be a member of the Department of Audio-Visual Instruction of the National Education Association and the local Film Council of America.

Seventh, the bureau likewise must have a publication program producing two types of material.—One is the publication of bulletins specifically produced by the bureau itself on a state basis. These should be available without charge to teachers, administrators, supervisors, and others who need them. Another avenue is to work with other groups in production of bulletins that the state bureau cannot produce. A recent example of this second type is "Setting Up Your Audio-Visual Education Program," the bulletin which was written by a committee of the Audio-Visual Education Association of California, Southern Section, and printed by Stanford University Press. It is short, terse, highly visualized and apparently is going to be a best-seller. The reviews of it indicate that it is one of the best produced in years.

The eighth function involves holding a workshop each year in connection with some one of the state colleges or universities. — In such workshops a group of leaders can sit down and really try to do some straight thinking. The first workshop was on administration. The second and third workshops centered on audio-visual education in the curriculum. A curriculum director and an audio-visual director from a district worked together on their problems, pooling them with the rest of the group. In these conferences the workshop group evaluated the whole audio-visual program in a very thorough manner, to the advantage of all educational personnel in the state.

A highly debatable function of a state bureau of audio-visual education concerns the operation of a central circulating library on audio-visual materials. — In California, a decentralized program is far stronger basically than a highly centralized program. We feel, on the basis of experience, that the materials need to be placed as close as possible to the persons using them. With a state as large as California, this cannot be done on a highly centralized basis. We want to help create an environment where a strong local-level audio-visual program will grow, and we believe in decentralization rather than centralization.

In closing, I wish to emphasize again that a state bureau of audio-visual education must create a desirable climate of opinion. This may well be its most important function. Then, on the local level the audio-visual education services will have the public and financial support necessary from both local funds and state funds to obtain the best instructional materials for the teachers and children of the state.

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(2) County

The suggestions presented here are based on the concept of a total educational program in which au-

dio-visual materials, which provide a close approach to reality in learning situations, are used as an important means of giving meaning to educational experience.

Suggestions for the Organization of a County Audio-Visual Education Program

While the realization of such an educational program must await the full development of audio-visual materials especially planned to fit the curriculum, much can be done now to make use of available materials and to plan for the use of materials that are rapidly being developed.

This report is organized under seven principal headings:

I. Chief objectives of a county audio-visual education program.

II. The county as the administrative unit for an audio-visual education program.

III. Audio-visual services that should be provided through the county audio-visual center.

IV. Aspects of the audio-visual program for which individual schools should be chiefly responsible.

V. Suggested ways of helping teachers make effective use of audio-visual material.

VI. Suggestions for financing the county audio-visual program.

VII. Personnel for a county audio-visual program.

I. Chief Objectives of a County Audio-Visual Education Program

The following are fundamental objectives in an audio-visual program:

1. Development among teachers of ability and willingness to make effective use of audio-visual materials.

2. Provision of an adequate supply of readily available audio-visual materials which have been chosen to enable teachers to develop and interpret the subject matter of the curriculum in the clearest possible manner.

3. Provision of a guide to available audio-visual materials, services, and equipment so that each teacher can locate immediately materials which can be used in teaching.

4. Provision of equipment and building facilities to enable teachers to make convenient and effective use of available audio-visual materials.

5. Provision of consultant service on curricular selection, utilization in terms of acceptable instructional practices, and evaluation of audio-visual materials.

II. The County as the Administrative Unit for an Audio-Visual Program

Audio-visual services adequate to meet the needs of classroom teaching can best be provided by a large administrative unit. For example, even the largest schools cannot afford to own all the films, filmstrips, slides, and other audio-visual materials that teachers may need. If individual schools attempt to obtain audio-visual materials from commercial and university film libraries, other difficulties arise. Rigid advance scheduling frequently makes it impossible for teachers to get materials when needed. The cost of a rental program is relatively great if extensive use is made of such service. The materials available for rent are not usually adequate for school needs; no commercial or university film library in California offers for rental all the other types of audio-visual aids in addition to films, such as filmstrips, slides, and transcriptions. For these reasons a rental program is less satisfactory than the maintenance of a library of audio-visual materials by a large administrative unit.

In the experience of the members of this committee, a county or city school system having an average daily attendance of around 12,000 is of sufficient size to serve as an administrative unit to maintain a well-balanced library of audio-visual materials. When the combined average daily attendance of all schools within a county system is less than 12,000, it may be desirable to co-operate with the audio-visual departments of other counties, or with city school systems, in the joint acquisition and use of the more expensive audio-visual materials such as motion pictures, exhibits, and dioramas. At the same time the administrative unit must not be made so large that relatively close contact between the audio-visual library center and the schools being served is impossible. An audio-visual center might well serve schools within a radius of sixty to seventy miles. Under circumstances where transportation and communication facilities are better or worse than average, it may be desirable to expand or reduce the area being served. In general, the audio-visual library should be able to give schools overnight service in making delivery of materials by truck, parcel post, or express.

(*Editorial note: Many county centers are able to give rapid service in emergencies by messenger.*)

Counties that do not have a minimum average daily attendance of 12,000 and which are unable to co-operate in a program with a neighboring county or city need not feel that a helpful audio-visual program is out of the question. While such systems may not be able to maintain a balanced library of educational motion pictures, a library of other less expensive types of audio-visual materials, such as filmstrips,

slides, flat pictures, and transcriptions, may be developed. Furthermore, individual schools should be assisted in making the best use of free and rental sources of films. Lack of what are considered desirable administrative conditions should not discourage a small county school system from developing its audio-visual program. Developments within the state and nation during the next few years may change existing circumstances so that the small system will be able to secure the use of visual materials as easily as larger systems. Particularly does television offer the promise that this will be possible. When that time comes, every school system should be prepared to use audio-visual materials to advantage.

III. Desirable Audio-Visual Services Provided Through the County Center

General Supervision of the Audio-Visual Program

It is desirable that general supervision of the audio-visual program be made the responsibility of a well-trained person. It is desirable that this training include experience with

1. Audio-visual equipment maintenance and repair.
2. Organization of a library of audio-visual materials.
3. Classroom teaching procedures.
4. Planning and production of school-made materials.
5. Planning and production of radio programs.
6. Curriculum development.
7. Administrative practices.

Maintenance of An Audio-Visual Center

The services that should be rendered by a county audio-visual center are discussed here under the following seven headings: (1) a library of audio-visual materials; (2) distribution of materials and equipment; (3) advisory service by audio-visual supervision staff; (4) offices, meeting and display rooms; (5) a production workshop; (6) an equipment maintenance service; (7) a handbook or guide to audio-visual materials and service.

1. *A Library of Audio-Visual Materials.* The county audio-visual library should distribute those materials which schools cannot economically provide for themselves, which are adapted to circulation among schools, and which teachers and pupils are able to use effectively. Types of materials which have these characteristics, as a general rule, are 16 mm. sound motion picture filmstrips, 2 by 2 inch slides, 3¼ by 4 inch slides, transcriptions, and study print sets. Maps and globes should usually be owned by the individual schools. Bulky or excessively fragile materials should not be chosen unless their great value in learning situations justifies their use.

Since the materials in the audio-visual library should be those that will give teachers the greatest possible help in teaching, the teacher and curriculum director should aid in their selection. The following procedure for choosing library materials is recommended:

1. All available existing catalogs and sources of audio-visual materials should be examined carefully by persons familiar with the curriculum. These persons should make a rough selection of materials that appear to have value. Materials selected in this manner should be listed on individual cards with brief descriptive annotations.
2. These title and summary cards should be reviewed by a large group of the teachers who might use the materials. When this review takes place the teachers and curriculum director should evaluate each item in terms of its possible usefulness in actual teaching situations.
3. All materials which appear to have value should be ordered for preview and experimental use. After seeing and using the materials, the teacher should fill out an evaluation report which includes a brief summary of content, an indication of possible uses, and a recommendation concerning acquisition.
4. The preview evaluation report should be used in determining whether the material is of sufficient value to be purchased, leased, or borrowed for the library.

The size of the library staff depends upon the volume of material handled, but a minimum staff should include a visual-aids librarian trained in library cataloging and in the handling of audio-visual materials. Since persons with this training are scarce, it is desirable to suggest to a suitable person that this preparation be secured in summer session or other advanced study. When the library is first set up, it is desirable to have the advice of a skilled person who is already operating a school audio-visual library. In addition to the librarian, there is a need for personnel to inspect and repair audio-visual materials and to perform clerical tasks.

2. *Distribution of Materials and Equipment.* If a county truck makes regular and frequent calls upon schools it may be used to transport materials and equipment. However, in certain counties, parcel post and express service are used at reasonable cost. In fact, it may be more economical and faster to use public delivery service than to maintain a truck and driver.

Every school, no matter how small, should eventually own a 16 mm. sound projector, a filmstrip projector, slide projectors, a two-speed record and transcription player, and a radio. If the school is not supplied with electrical current, a 110-volt, 1500-watt alternating current gasoline motor-driven generator may be used. However, when the audio-visual pro-

gram is being organized there will be many schools that do not have all the above equipment. As a part of the in-service training of teachers it will be necessary for the center to circulate equipment to schools. In some instances it has been found desirable to set up a regular schedule for the use of the motion picture projectors in order that films may be booked in advance by schools, other equipment being sent out only on request. Every effort should be made to encourage schools to secure their own equipment and thus reduce this service through the center.

3. *Advisory Service by Audio-Visual Supervision Staff.* Well-trained personnel should be available on regular schedule for consultation with teachers on the selection of materials and the use of equipment.

4. *Offices, Meeting and Display Rooms.* The provision of offices for audio-visual supervisors and rooms suitable for meetings of teachers for previews, demonstrations, and discussions as well as for display of exhibit materials is indispensable to an effective program.

5. *A Production Workshop.* Space and equipment should be provided for the production of school-made and county-made materials. It is desirable to have a photographic darkroom, a workroom, and a recording studio. Where space is limited the recording studio may be planned in combination with a preview room.

6. *An Equipment Maintenance Service.* The center should operate an equipment maintenance service. Such a service can speed repair and adjustment and keep equipment in good condition. Although it may be necessary to return equipment to factory repair centers for certain repairs, the majority of adjustments and repairs can be made by a competent technician. Since this work does not usually require full-time service, certain counties have met this need by employing a local theatre projectionist during his spare time.

7. *A Guide to Audio-Visual Materials and Service.* One of the essentials of an effective audio-visual program is a well-developed printed or mimeographed guide or handbook. The guide should include the following types of information:

1. Complete instructions for ordering, handling, and returning materials and equipment.
2. Suggestions for effective use of materials and equipment.
3. Materials correlated with the areas of learning as organized in the curriculum.
4. Materials listed according to topics.
5. Materials listed in alphabetical order according to type, and briefly summarized as to content and value.

IV. Aspects of the Audio-Visual Program for Which Individual Schools Should Be Chiefly Responsible

Every school should have the following minimum equipment:

1. 16 mm. sound motion picture projector—one for 200 pupils.
2. 35 mm. filmstrip projector—one for 200 pupils.
3. Projector for 2 by 2 inch slides—one for 200 pupils.
4. Projector for $3\frac{1}{4}$ x 4 inch slides—one for 400 pupils.
5. Suitable projection screens—one for each room.
6. Two-speed record and transcription player—one for 300 pupils.
7. Radio—one for each room.
8. Kit for making lantern slides—as needed.

Schools should keep on hand all materials which are in constant use and which should be available for quick reference. Standard maps, globes, and charts are examples of this kind of material. In addition there may be some films, filmstrips, and slide sets which are used so frequently in a large school that it is desirable for the school to own them. For example, a school that uses filmstrips as the basis of its shop course might find it desirable to have the entire set on hand in the school throughout the year.

Schools of medium and large size may find it desirable to have a public address system, exhibit cases for permanent audio-visual displays, a disc-type transcription recorder, and a magnetic recorder which records sound on a steel tape or wire. Every classroom should be adapted for the use of projection devices. If this cannot be done by installation of suitable equipment for darkening the room, then use can be made of the translucent cabinet type of screen which permits projection from the rear of the screen in a lighted room.

Each school should be organized for convenient use of audio-visual materials. Responsibility for coordinating the audio-visual program in each school should be assumed by a trained person who is allowed time to do the work. This person should be responsible for receiving and returning all materials secured outside the school. He should be responsible for the care of audio-visual equipment and for direction of student operators. In addition he should be capable of giving advice to other members of the school staff. He should be in close touch with the audio-visual center so that communications for the school staff may be transmitted quickly.

A staff of student assistants may help in the use of audio-visual materials by various types of activity, such as

1. Preparing classrooms, setting up equipment, and darkening rooms.

2. Operating all types of equipment.

3. Cleaning and oiling equipment.

4. Delivering materials and equipment.

V. SUGGESTED WAYS OF HELPING TEACHERS TO USE AUDIO-VISUAL MATERIALS

General Principles of Use

1. Teachers, supervisors, a n d administrators should be given reason for wanting to learn about the use of audio-visual materials. They should have all proof possible of the value of audio-visual aids in learning.

2. The in-service training should be given in situations that approximate those in which teachers will make use of audio-visual materials.

3. The provision of adequate materials and equipment needed by teachers is essential.

4. Interest builds increased interest. Teachers interested in audio-visual materials stimulate other teachers to use them.

5. The most valuable means of encouraging use of materials is a good guide to materials. Simple procedures for ordering are desirable.

6. Every effort should be made to enlist the interest and aid of principals, supervisors and directors of curriculum in promoting a well-rounded program of audio-visual education.

Suggested Techniques for Carrying on In-Service Training Program

1. Arrange experimental curriculum-development programs in which teachers are encouraged to make use of audio-visual materials as a means of improving the quality of instruction.

2. Hold demonstrations and arrange for lectures at teachers' institutes and workshops. Provide opportunities for practice in the use of equipment.

3. Arrange demonstration lessons in actual classrooms and invite teachers to visit and to demonstrate.

4. Give teachers responsibility for assisting in the previewing and evaluating of materials being considered for addition to the library.

5. Gain teacher participation in the planning and making of school-made audio-visual material.

6. Hold individual conferences with teachers and small groups to give advice in the use of audio-visual material.

7. Prepare bulletins and monographs which give information needed by teachers.

8. Supervise teachers' use of audio-visual aids and enlist interest and help of all general and special supervisors.

9. Distribute study guides and outlines.

10. Organize an audio-visual education advisory group composed of the co-ordinators of audio-visual education from each school. This organization can assist each school to meet its particular problems.

11. Secure and make available all audio-visual aids that are of value in training teachers to use audio-visual material.

12. Use every opportunity to bring examples of the best use of material to the attention of teachers.

13. Arrange to have in-service training programs carried on at times when teachers are most receptive. A suitable time for such a meeting is Tuesday afternoon of a minimum day following the serving of tea. In same localities Saturday morning breakfast meetings have met with success.

14. Arrange for evaluation of results of use of audio-visual material.

15. Provide lists of audio-visual aids for each unit of work prepared by the curriculum department and include these among the references of the unit.

16. Include specific suggestions for use of audio-visual aids in units of work as they are being prepared.

VI. SUGGESTIONS FOR FINANCING THE COUNTY AUDIO-VISUAL PROGRAM

Each district should be responsible for the purchase of all audio-visual equipment and materials permanently placed in the district. This is generally recognized. However, it is also essential that the expense of buying and handling audio-visual materials which are circulated among all schools through an audio-visual center be recognized as a definite obligation of each district. Such materials are a part of the learning equipment of each school even though it may be necessary to house them in a central library in the county. As such they should be financed by school districts just as the districts buy desks, textbooks, or other materials which remain in the school.

The cost of operating the audio-visual center should be met by contributions from each district based upon the size of the district and its ability to pay, and by a contribution from funds at the disposal of the superintendent of schools.

The legal basis for the maintenance of co-operative audio-visual education services is found in the California Education Code. Sections 18941 to 18945 authorize the county superintendent of schools, with the approval of the county board of education, to establish and conduct audio-visual services for the benefit of the schools of the county. Section 18946 authorizes school districts to contract with the county superintendent of schools for such services and to use school district funds in payment for these services.

The contract form reproduced here is a sample of that used in Kern County . . . to cover contributions by local school districts to a fund to be used by the office of the county superintendent of schools for audio-visual services.

RESOLUTION
of the Governing Board of the
....School District Authorizing
Contribution for Audio-Visual Services

Whereas, Section 18946 of the Education Code provides that "The Governing Board of any school district may contract with the County Superintendent for [Audio-Visual Education] services"; and

Whereas, The Kern County Superintendent of Schools

1. Recommends a contribution based upon the following scales to raise the amount necessary to provide such services to the schools of Kern County:

   1 to 3 teacher units..............$1.00 per a.d.a
   4 through 6 teacher units .90 per a.d.a.
   7 through 12 teacher units .80 per a.d.a.
   13 through 20 teacher units .70 per a.d.a.
   21 and over teacher units.... .60 per a.d.a

   Teacher units will be the number of teacher units at the close of the 1944-45 school year.

   It is further recommended that no school contribute less than $25.00.

2. Agrees that all moneys so contributed will be used only for the purchase or rental of materials and apparatus and for their transportation to and from the schools.

3. Agrees that the school districts will be entitled to avail themselves upon request of any audio-visual materials in the Kern County Schools Film Library.

4. Further agrees that no school unable to contribute as much as recommended shall be denied the use of audio-visual educational materials.

Therefore, Be It Resolved, That this district enter into such agreement with the said county superintendent who is hereby authorized to transfer from the funds of this district to the audio-visual education fund a total amount of $.............................

I Hereby Certify, That this above is a true and correct copy of a resolution adopted by the governing board of the above named district on the................................day of ...., 19.........

[Signed]..., Clerk

VII. PERSONNEL FOR A COUNTY AUDIO-VISUAL PROGRAM

A county audio-visual education program requires a director with a rich educational experience in the types of schools which he is to serve. He should understand the offerings in the audio-visual field and be alert to its newer developments. He should have definite qualities of leadership.

In addition to general supervision and administration, provision should be made for personnel to carry on the following services:

1. Library management.
2. Checking equipment and materials in and out, packing and shipping.
3. Picture mounting, boxing, labeling, repairing.
4. Photographing.
5. Repairing equipment.
6. Secretarial work.

The director in a small county may possibly be able to undertake one or more of these duties in addition to his professional work. He should not be required to undertake all of them. In small counties one or two clerks may assume some of the duties not performed by the director. In larger counties more than one employee may be needed for each type of work.

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(3) City

The success of an audio-visual program is largely dependent upon sound principles of administration and finance. Without the necessary leadership and adequate financial support, the program will be seriously handicapped. School board members and school administrators must be made conscious of the various aspects of an audio-visual program and be provided with guideposts, which might serve as criteria in setting up their own administrative and financial machinery. It is, therefore, the purpose of this chapter to outline and suggest the various aspects of administrative and financial procedures to be considered in making it possible for the teaching staff to secure the right audio-visual materials and equipment at the right time and to provide the necessary professional assistance to assure good utilization.

Administration and Finance

AVID of Indiana, Handbook for the Audio-Visual Program. Bloomington: Indiana University, Audio-Visual Center. 1948. Chapt. VI. Pp. 22-25.

ADMINISTRATION

A. Administrative and supervisory duties and responsibilities of the director. The director is the professionally-trained staff member who is responsible for the administration and coordination of the audio-visual program. His duties include:

1. General Administrative Duties—
   a. Appointing and training assistants.
   b. Preparing and documenting the budget.
   c. Setting up evaluative criteria to determine the needs and results of the program.

2. Production of Audio-Visual Materials—
   a. Supervising the production of locally-produced materials.
   b. Preparing guides to accompany audio-visual materials.

3. Distribution of Audio-Visual Materials—
   a. Directing the evaluating, selecting, and purchasing of new materials and equipment.
   b. Supervising the distribution of materials and equipment.
   c. Providing selected bibliographies, catalogs, and other information about audio-visual materials.

d. Arranging storage, maintenance, and repair facilities.

e. Cooperating with regional and state agencies in extending the use of audio-visual materials.

f. Enlisting support for the program through public education.

4. Utilization of Audio-Visual Materials—

a. Serving as a consultant in arranging the necessary physical plant facilities for adequate use of audio-visual materials.

b. Working with teachers, supervisors, and curriculum directors on problems concerning the integration of audio-visual materials into the curriculum.

c. Arranging demonstrations of good utilization techniques.

d. Consulting with teachers and assisting them in programming and using audio-visual materials effectively.

B. Selection and appointment of the director. In order to qualify for the position of audio-visual director, the candidate should meet (certain professional) requirements . . . (See Section H—Personnel.) In addition to the academic and experience requirements listed above, the director should possess the following qualifications:

1. A sincere interest in the audio-visual field.
2. General administrative ability.
3. Ability to get along with people.
4. Sufficient mechanical aptitudes to supervise maintenance of equipment.

The method of appointing the audio-visual director should parallel the procedures followed in appointing other supervisory staff. He should be directly responsible to the superintendent and receive all assignments of duties from his office.

C. Duties and responsibilities of building coordinators and staff personnel. The building coordinator is a professionally-trained individual, usually a teacher, who has been released from part or all of his other duties to assume responsibility for supervising the audio-visual program in his school. The duties of the building coordinator include:

1. Keeping the teachers in his school informed about available materials.
2. Helping teachers to select suitable materials to meet their needs.
3. Assisting teachers in improving utilization.
4. Supervising the evaluation of materials used in his school.
5. Coordinating the orders for materials that are requested by each teacher in his school.
6. Preparing a periodic schedule of materials and equipment used.
7. Training personnel to operate equipment.

8. Supervising the storage and distribution of materials deposited in his school.
9. Providing, within the general school system plan, for production of audio-visual materials needed by teachers in his own building.

The professional, technical, and clerical staff within a school should be directly responsible to the coordinator and should be assigned specific duties which will facilitate the operations of the department.

In many schools, teachers with competencies and interests in specialized areas of the audio-visual education program will be included on the professional staff of the audio-visual center on an extra-curricular or part-time basis. For example, a staff member of the social studies department might be assigned to preview films in the area of social studies and prepare annotations and teacher utilization material. Or, a teacher with high ability in either still or motion picture photography might be assigned to do the photographic work on school-produced materials. Similarly, in the areas of development of educational radio programs and production of graphic arts there are many opportunities for using the skills and abilities of faculty members.

D. Relationship of the director to the building coordinators and building principals. This relationship should conform to the established practices of the other administrative and supervisory staff members. In some school systems, the superintendent holds the building principal responsible for all administrative and supervisory duties in connection with his particular building; whereas in other systems the superintendent may authorize the supervisors of various departments to assume this responsibility. It is suggested that the program be established and function as a cooperative enterprise based upon sympathetic and mutual understanding between director, building principals, and building coordinators.

E. Responsibility of the director in selecting, appointing, and defining the duties of his professional, technical, and clerical staff. The selection and appointment of building coordinators would be made through a joint conference of the superintendent, the building principals, and the director. Appointment of technical and clerical staff would be made by the director in cooperation with the superintendent.

It has been suggested that Indiana schools should plan for the equivalent of one audio-visual staff member of professional status, plus the needed clerical and technical assistance, for each fifty teachers; a half-time professional staff member,

plus assistance, for the twenty-five teacher system or school; and a fourth-time professional staff member, plus assistance, for the ten-teacher system or school. It is assumed, under this arrangement, that the release time assigned to the building coordinators would be considered professional time.

In schools having an excess of fifty teachers, however, it may not be immediately feasible to provide one professionally trained audio-visual staff member for each additional fifty teachers. As audio-visual activities are extended to include production as well as distribution and utilization, and as a larger proportion of the teaching staff use audio-visual materials than at the initiation of the program, staff increases along the lines suggested will undoubtedly prove necessary.

F. In-service training of staff and teachers. The director might assist in the following:
1. Arranging for extension courses to be offered by a college or university in the vicinity.
2. Developing an instructional materials center which might serve as a workshop for teachers.
3. Arranging summer workshops or short training courses during the year.
4. Planning institutes, workshops, or conferences of short duration.
5. Serving as a consultant to the administrative and teaching staff of the system.

G. Supervision of physical facilities and arrangements. Responsibilities might include:
1. Surveying physical plant facilities to determine adequacy of darkening and ventilation of classrooms.
2. Checking on availability of electrical outlets in classrooms.
3. Arranging adequate space for storage, maintenance, and repair of materials and equipment.
4. Setting up the necessary distribution facilities for the circulation of equipment and materials.

H. Supervision of efficient distributive machinery. Adequate financial support, good in-service training programs, and skilled supervisory personnel are not sufficient for an effective audio-visual program. Materials and equipment must be easily procurable by the teaching staff.
1. The *service* aspects of audio-visual administration must keynote the distributive program. Instructional need must be paramount at all times in determining distributive policy. The director and his staff of building coordinators, technicians, and clerical help must literally and figuratively go to the teacher and not demand that she always come to them.

2. Materials of all kinds should be available on as short notice as can possibly be worked out:
   a. The audio-visual administration should not require longer than one week's notice for materials owned by the system and not in use by other teachers.
   b. Materials that can be rented should not have to be requested, in general, earlier than thirty days ahead; free loan materials, thirty to sixty days. Making up orders for any kind of audio-visual materials a year in advance should be avoided, unless the teacher involved specifically demands such an advance schedule.
3. Red tape in securing materials must be kept to a minimum. Simple, effective forms can be worked out for all distributive procedures.
4. Transportation of materials between buildings should be provided whenever possible. Teachers should not have to act as delivery boys, as a general rule.
5. Movement of equipment within buildings must be provided for by janitorial staff, husky boys in junior and senior high schools, or male audio-visual building coordinators. This will be necessary until equipment is decreased in weight so that it may be safely and easily transported by all teachers and older students.
6. Inspection of all incoming or outgoing rental or loan materials by the central audio-visual administration is highly desirable to: decrease mechanical problems in using audio-visual materials, and decrease financial liabilty for damage incurred to materials by users.

I. Contribution of the audio-visual program to public relations. Audio-visual materials can make a unique contribution in interpreting the activities of the school and serving as a means of bringing information to the adult organizations of the community. The following projects might be initiated by the director:
1. Arranging displays which interpret types of school activities in downtown windows.
2. Arranging school exhibits to which the community is invited.
3. Producing audio-visual materials of school activities for school and community consumption.
4. Providing audio-visual materials and equipment for use by community organizations . . .

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PERSONNEL

A *head supervisor* with experience in supervision and teaching who understands teachers' problems as related to the curriculum, who supervises the work of preview committees in the selection of pertinent

materials to be purchased, directs the work. On the administrative side, he is responsible for the opera-

The Audio-Visual Department

tion of the department and through his staff maintains up-to-date bibliographies, bulletins, and study guides for materials in the department. In addition, he keeps informed on the latest equipment available. The head supervisor assists key persons in the various schools on such

matters as room darkening, selection and care of equipment, and the production of audio-visual materials.

For increased efficiency in the use of audio-visual materials, the head supervisor conducts workshops for in-service growth, operation of machines, production of instructional materials, selection and utilization of multi-sensory materials for new units of work.

A *secretary* who answers the telephone, prepares bulletins, cares for the correspondence, notifies preview committees, writes requisitions, and checks in all purchases.

Three library clerks with three clerk assistants whose duties are to book films and other materials, check the daily outgoing materials and returns, care for the files, assist teachers in finding items which they need, catalog new materials, prepare the unit bibliographies, and keep the inventory of all materials.

Three technicians who care for equipment, inspect and repair damaged materials, pack the orders, mount pictures, preview new materials, instruct teachers in operation of equipment, and transcribe and duplicate radio and other sound programs.

Three student helpers (@ $1.00 per hour), who together equal approximately one full-time employee. These boys inspect and repair films and other materials, pack orders, and help with the general office routine. We could not operate without them.

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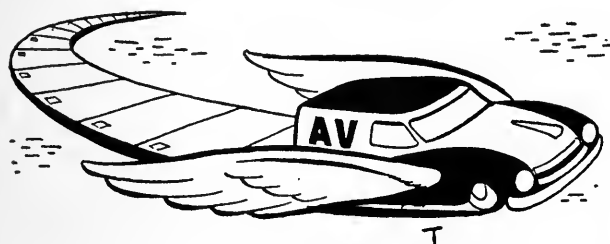
(4) Building

As more and more learning materials become available, the need for an audio-visual building coordinator in every school increases. Such a coordinator is usually a skilled and interested teacher who has had special preparation and experience in the use of audio-visual materials and equipment. In most

Audio-Visual Building Coordinator

schools released time from teaching is given in proportion to the extra work demands that this responsibility makes on the school coordinator. This varies from one or two hours a day in small or medium-sized schools to

half- or full-time work in some larger schools.

AREAS OF RESPONSIBILITY

A recent survey shows that building coordinators have actual duties in nine main areas of responsibility. These are:

(1) General administration, such as recommending a budget;

(2) Ordering and scheduling of materials and equipment;

(3) Maintenance of equipment and facilities;

(4) Improvement of utilization, including giving demonstration lessons;

(5) Liaison with central audio-visual service;

(6) Preparation and distribution of information;

(7) Development and upkeep of school library for audio-visual materials;

(8) Care of school-produced audio-visual materials;

(9) Preparation of community-relations programs.

Successful professional relationships depend completely on the type of teacher who serves as building coordinator. Ideally, he is a volunteer—an apostle of better use of materials and equipment. His personality is positive and helpful—the kind that invites others to call for assistance and advice in improving teaching. His love of children and enthusiasm for helping them learn is infectious. Above all, he is sincere in his dealings, without desire for a separate little kingdom of his own.

JOHNNY-ON-THE-SPOT

Though a building coordinator teaches classes, he needs also to be an "Information Please" man for fellow teachers. His colleagues will expect information on all types of audio-visual materials. They will want him to maintain an up-to-date file of catalog materials and a bulletin board describing new developments. When they come to him with needs, they will seek complete instructions: aid in selecting, ordering, and

previewing films, for example, as well as in planning for immediate classroom use.

To assist with the long-range program of improvement, the coordinator needs to maintain an evaluation file of materials used in the building. Here, various teachers can record their judgments of materials which come to them. Later, this information may be very valuable.

A competent projectionist club enables teachers to concentrate on being classroom teachers rather than equipment technicians. By training students to serve as projectionists, the building coordinator thus aids his fellow teachers. If he explains the equipment to teachers, they will know what service to expect from the student projectionist. This helps them to be calm and cool if something should go wrong. High morale in a projectionist group leads to security for teachers and to a finer learning situation for children.

An active, ingenious coordinator helps teachers create materials which are unavailable through purchase or rental. Many discarded materials can be turned into good teaching aids. Milk cartons from the cafeteria can help in the teaching of arithmetic concepts. Cardboard boxes which bring folders to the school can also be used as picture files. Audio-visual magazines carry many ideas which help teachers make their own materials.

Many magazines carry lists of free or inexpensive materials. A careful selection of such items will contribute a great deal to an instructional-materials program. In calling these materials to the attention of teachers, the coordinator once again broadens the variety of learning experiences for children.

Speakers, nearby community resources, and opportunities for field trips are other phases of the audio-visual program which the coordinator does well to keep in mind.

Sharing the Task

Obviously, no full-time teacher *working alone* can do all these things well, and retain his sanity. A recent survey of 50 major cities in the United States reveals that released time for audio-visual coordinators seldom exceeds one or two hours per day. Another survey of Connecticut shows that 304 out of 673 schools have coordinators, but only 21 of these men have 10 or more hours assigned for their duties. Therefore, to achieve his goal, the coordinator needs to organize the efforts of many persons.

The time-consuming work of distribution, projection, and care of equipment and materials can be shared with (1) the rest of the school staff and (2) school children who profit personally from serving as helpers.

The custodian will often help with maintenance of equipment and building of cabinets and carts. The school secretary or librarian can help by checking in and out films, filmstrips, recordings, and other items. A student projectionist club can handle the actual playing-back, projection, and transportation of materials. Individual school systems vary in their regulations concerning these matters. Whatever the regulations, however, a coordinator will want to organize the program so that others assist in its routine work.

Even with this help on routine work, the coordinator with the usual amount of time available for audio-visual education is hard-pressed to accomplish very much real leadership. The wise coordinator looks for help among his colleagues.

One teacher may frequently use recordings and radio programs. Another may have a special knack for preparing interesting bulletin board displays. Often a teacher will have experimented with photography and made his own slides for class use. The teacher who enjoys map study, the teacher who collects picture postcards, the collector of historical artifacts—these people, and many others, have been enlisted by coordinators to help plan and guide audio-visual education.

Teachers with responsibility for some specific phase of the program—such as helping fellow teachers with radio utilization—find real satisfaction when their unique abilities receive recognition. The teacher who needs help on some particular phase of audio-visual teaching and who finds his colleagues willing to share ideas and materials, easily accepts the use of audio-visual instructional materials. He feels the program is designed to help him personally.

This type of coordination has resulted in a unique pattern of leadership in many schools. Many teachers share with the coordinator the responsibility of helping all the staff use audio-visual materials. Surprisingly, this sharing is actually more efficient than if the coordinator ran the whole show himself. More teachers use audio-visual materials; in fact, the number of teachers using such aids is in direct proportion to the number of people providing leadership.

The Coordinator's Approach

An audio-visual coordinator works with the staff in developing technics and materials that everyone can use. He sees to it that teachers know of the particular contributions that can be made by individual staff members. He encourages all teachers to develop unique technics that will fit their own approaches to teaching. Not every one on the staff turns to the coordinator for specific information or help on audio-visual problems, but indirectly this

coordinator is responsible for helping all teachers improve their classroom teaching.

Coordinators have discovered through necessity that democracy in school supervision really works. Few individuals, no matter what their personal qualifications, can be effective in helping all people with whom they work. Audio-visual coordinators have made a real contribution to schools by improving staff relationships and by giving a practical demonstration of the efficacy of shared responsibility.

Children need recognition; they need to feel that they have a share in planning their own activities. Teachers have the same needs, and when these needs are met, teachers accept audio-visual education as their own program for improvement of classroom methods.

Last of all, and probably first of all, the ideal coordinator is himself a master teacher who uses all types of instructional materials in a sound manner. He who preaches a gospel must accept wholeheartedly that which he preaches. An audio-visual building coordinator dedicated to the cause of improving instruction for children can make a major change in any school.

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B. ARCHITECTURAL PLANS

PERFORMANCE STANDARDS FOR CLASSROOMS

The classroom should be given first consideration because it is the natural environment for teaching—the normal place for utilization of audio-visual materials.

Listed below are items which should be given special consideration by boards of education and by architects when planning new buildings. These represent what the Committee believes to be basic minimal requirements for equipping any modern classroom for utilization of projected audio-visual materials. Audio-visual experts should be consulted wherever a new school building is planned or an old school building renovated.

Buildings and Equipment

A Report by Action Planning Committee Section 3, Irene Cypher, Chairman. DAVI Boston Conference Proceedings 1952. Washington, D. C.; Department of Audio-Visual Instruction of the National Education Association. 1952. Pp. 3-7.

OUTLETS

A minimum of three double outlets should be included in every classroom. These outlets should be located as follows:

(1) one in the front of the room.
(2) one in the rear of the room.
(3) one on the side wall.

These outlets should be in the center of the front, back, and side walls and should not be higher than approximately three feet from the floor.

These outlets should be adequate to carry a load of 20 to 30 amperes. Wherever possible circuit breakers should be used rather than fuses.

LIGHT SWITCH

In the standard classroom, the motion picture projector would normally be operated from the rear of the room. A light switch, controlling the room lights, should be located at the back of the room within easy reach of the projectionist; there shoull also be a control switch at the front of the room.

SOUND

A 3/4 inch conduit should be run from the center of the rear wall to the center of the front wall adjacent to the electric outlet.

A permanently installed speaker which could be used for all types of equipment is desirable for each room.

ACOUSTICS

Acoustical treatment of all classrooms is essential not only for audio-visual work, but also for regular classroom teaching . . .

Good acoustics within the room can be obtained by a simple analysis of the architecture of the room to avoid echoes and reduce excessive reverberation. (Echoes are not usually encountered in classrooms due to their small size.) Reverberation can be controlled with sound absorbing materials—quantity and type determined by room size, furnishings and number of pupils—by the simple use of a formula. This method is clearly explained in a booklet entitled "Theory and Use of Acoustical Materials" and available at a price of $.25 by writing to the Acoustical Materials Assoc., 59 East 55th Street, New York 22, N. Y. . . .

Interference from noise in adjoining spaces can be reduced by lowering the sound level in such spaces as corridors, gymnasiums, etc . This is accomplished by using sound absorbing material on the ceilings of those spaces . . .

LIGHT CONTROL

All rooms must be provided with darkening facilities. A reduction of the light level to 1/10th footcandle should be possible under any outside light conditions.

VENTILATION

Adequate ventilation must be available throughout the school regardless of light control.

Storage

Special provision should be made in the classroom for locked storage of audio-visual equipment and material.

Transportation

Door sills should be so designed that equipment carried on wheeled carts can be easily transported from room to room.

Screen

There should be a screen, the surface of which provides projection reflection equal to or superior to that of a crystal beaded screen.

The screen size should be 70″ x 70″ minimum and should have a protective covering. The general requirement is that the width be equal to 1/5th of the greatest viewing distance.

The screen should be mounted in such a position that the bottom will hang at the eye level of the pupils in the room and so that no installations such as ceiling lights, etc., will interfere with the viewing of the screen.

Bulletin Board Areas and Display Cabinets

Adequate attention should be given in all classrooms to the provision of ample bulletin board areas and display cabinets. The quantity and nature of this need is dependent upon the age of the pupils and the subject areas to be taught.

Recommendations for Action

1. Research is needed in the following areas:
   (a) Screen size, screen brightness, light level in rooms, and viewing distance.
   (b) Equipment needed for doing an effective job of teaching. This would include performance standards for all types of audio-visual equipment.
   (c) Bulletin board areas, chalk board areas including chalk board surfaces, and display cabinets.
   (d) Methods of securing community support for an effective audio-visual program.
   (e) Light sources and control with special consideration of the problems presented by glass walls including glass brick, sky lighting, etc., with consideration given to windowless classrooms at various grade levels.
   (f) Work of the building coordinator as it relates to building facilities required for an audio-visual office, preview room, etc.
2. A bibliography should be prepared of all research in this field up to the present time.
3. Articles in the area of building and equipment facilities for improved audio-visual use should be published in various national periodicals.

4. It is recommended that manufacturers who advertise and print pictures of ideal classrooms include audio-visual materials and equipment in such pictures to show that it is really a modern, functional classroom.
5. The research that has been completed so far by the national Building and Equipment Committee should be made into a filmstrip and distributed nationally . . .
6. The national Building and Equipment Committee should continue to collect supporting data and illustrations in the various areas of audio-visual building and equipment facilities and to publish these as preliminary reports as they are prepared.

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There is general agreement among parents and educators that children must be adequately prepared to meet the demands of the modern world. There is also agreement that a child's classroom education can be greatly enriched by bringing the world to him through controlled audio-visual experience. What is

The Why of Classroom Planning

not so widely understood is that the school building itself must be carefully designed to provide for the full utilization of all types of equipment and activities essential to modern teaching. The classroom should be given first consideration because it is the most used environment — the normal place for utilization of audio-visual materials.

A wide range of instructional resources is required to achieve modern curriculum aims. School administrators, architects, faculty members, patrons, and builders must join together in school plant planning to insure that classrooms make possible proper use of motion pictures, slides, opaque materials, filmstrips, recordings, radio, television, and display exhibit materials.

The relationship of building facilities to the school program within the building was emphasized by Dr. Theodore D. Rice of New York University at a conference on school planning called by the American Association of School Administrators and the Department of Audio-Visual Instruction. Dr. Rice said, "First we shape our buildings and then our buildings shape us."[1] Unless proper consideration is given to the planning of buildings for the use of audio-visual and other learning materials, new buildings will be obsolete for learning purposes by the day they are completed.

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1. These words were spoken by Winston Churchill in an address to the House of Commons.

For economy and convenience, provisions for the use of audio-visual materials should be made when new schools are designed and should not be neglected when older schools are remodeled. It must always be remembered that school plants are constructed not for today alone but for a generation of use.

It must also be emphasized that the needs of children are not met when only one room in a school is adequate for use of audio-visual materials and when classes must be shifted from the normal learning environment, the classroom, to a special projection room.

The use of one or two special projection rooms in a building is sometimes justified as being less expensive than equipping every classroom for the use of projected materials. However, surveys in Los Angeles and in Virginia show that outside light can be controlled in the average classroom by the installation of drapes costing about $100. It is, therefore, more economical to provide light control installation for all classrooms than to spend $20,000 to $30,000 for an additional room to be used as a projection room. In addition to the savings made there is an increase in ease with which teachers can use audio-visual materials and an opportunity for many classes to use audio-visual materials at one time. These two latter facts are of greater importance than the financial saving.

Neither are classroom needs adequately met when a teacher must ingeniously devise, at the expense of time needed for pupil guidance, means of using modern instructional materials effectively. Conditions in the rooms should be such that the learner can hear appropriate sounds without distraction, can see projected pictures without strain, and can participate comfortably in any classroom activity which will favor desired learning results . . .

PERFORMANCE STANDARDS
LIGHT CONTROL
Amount of Light Control Required

It is recognized that, with modern well functioning projection equipment, *some* pictures may be viewed effectively when the light level in the room is higher than one-tenth foot-candle. This specification of minimum brightness does, however, recognize the necessity of achieving satisfactory light control for the use of color projections, for the use of such important classroom devices as the opaque projector and the micro-projector, for the comfortable viewing of pictures over a considerable period of time, and for good tonal quality in the projected picture . . .

Research on the illumination of projection screen surroundings has been carried on for a number of years by the Illumination Engineering Society. In view of our present knowledge, it seems desirable to

be able to vary the amount of general illumination in the room during projection from one-tenth to one foot-candle. When one foot-candle of light is directed downward in a small room, probably about one-half foot-candle of nonprojected light will be falling on the projection screen. One foot-candle of down-lighting on desks will permit the taking of simple notes.

Because of the variable character of outdoor light admitted to the classroom at various times of the day, it is difficult to admit just the proper amount of overall illumination for the classroom during projection by use of partially translucent material over the windows. The simplest and most desirable method of obtaining the proper amount of room illumination during projection is to use general low-level lighting.

This low-level lighting can be provided by one or two lighting fixtures installed in the ceiling toward the side of the room opposite the projection screen in such a manner that the light is directed downward. By varying the wattage of the bulbs used in such fixtures, considerable flexibility can be obtained as demanded in each classroom. In many small rooms it is more practical to get the low-level lighting by the use of extra switches than by the use of dimmers.

If no provision is made for low-level general illumination in the classroom, consideration should be given to the matter of brightness surrounding the screen. In investigations conducted by the General Electric Company it was found that a 25-watt lamp located behind a screen gives a pleasing brightness around the screen and reduces the strong contrast produced when there is no light in the room other than that on the screen itself. This arrangement works best when the background does not contain highly reflective surfaces to catch the light.

METHOD OF LIGHT CONTROL

The most common methods of light control were found to be:

Drapes
Opaque shades (blinds)
Full closure Venetian blinds, adjustable louvres, and jalousies.

The generally accepted advantages and disadvantages of each of the three common methods of light control will be discussed briefly. In selecting a method or methods of light control to be used in any given situation, planners should consider: (a) effectiveness for controlling light, (b) durability, (c) cost, (d) ease of installation, (e) ease and cost of maintenance.

Drapes — The results of surveys indicate widespread recommendation of drapes as an effective and economical method of light control, and the trend seems to be toward the use of opaque, fire-resistant, plastic drapes installed on tracks.

Literature in the field contains such descriptive names of drapes as roller-type drapes, pull-up accordion drapes, portable drapes, pull drapes mounted on wire, and pull drapes mounted on tracks. Drapes may be made of opaque cloth of many types or of opaque plastic.

The method of light control favored by most audio-visual directors at the present time is the use of pull drapes on tracks. Among advantages set forth for this method are:

1. They are highly efficient when properly installed.
2. They are easily operated.
3. They need not interfere with ventilation of classroom.
4. They may improve acoustics of classroom.
5. They are available in colors and may therefore be planned to add to the attractiveness of a room.

Additional advantages claimed for certain types of plastic drapes are:

1. They are fire-resistant.
2. They are easily cleaned.
3. They permit use of lighter weight track which is easily installed.
4. They are less expensive than woven cloth drapes.

Some limitations of drapes are:

1. Some types are bulky.
2. They collect dust and must be cleaned periodically.
3. Cloth drapes need to be made fire-resistant.

Tracks for drapes should be installed about 12 to 18 inches out from the windows depending on clearance needed for cabinets below the window and/or for ventilation. Drapes should be allowed to hang approximately 12 to 18 inches from the floor, and should be secured at each end and overlapped 8 to 12 inches in the middle to prevent light leaks. Such installation will provide light control while allowing air to enter the room through open windows.

Pleats may add to the esthetic quality of the installation especially when the drapes are drawn but they are not needed for light control and add 50 to 100 percent to the cost of material. In addition, pleated drapes are often bulky and difficult to draw back so as to free all window area for the admission of light.

Satisfactory drape installations can be made both with and without traverse control cords but the installation of cords is a good investment because the drapes are easier to open and close and there is less chance that edges of the drapes will be damaged.

Drapery track should be selected on the basis of the service it will be called upon to perform. It is a mistake to install a lightweight track to support a heavy drape. On the other hand, a very heavy track is not needed for lightweight drapes. Some tracks have the advantage of bending easily so that they can be installed to allow drapes to be pulled around a corner to hang against an unused wall when not in use.

Shades — The most common type of opaque shade is the permanently installed rolled type. For complete satisfaction, most installations require special flaps or channels to eliminate light leaks. These channels may be made of wood or metal. Hinged flaps are recommended since they are less likely to fray or tear the edges of shades.

Also available are portable shades which can be moved from room to room with relative ease. However, they represent a make-shift arrangement with most of the disadvantages of the "projection room" concept of audio-visual education. The number of teachers able to use projected materials at one time is limited by the number of sets of portable shades. Class time is wasted in preparatory activities and in general the ease of using materials is reduced. They are not recommended.

The following advantages and limitations of roller shades should be noted:

1. Advantages
   a. Easy to operate when properly installed.
   b. Available in colors and may, therefore, be planned to add to the attractiveness of a room.
   c. Less expensive than drapes for use in some older classrooms having relatively small window area to cover.
2. Limitations
   a. Are often not efficient, especially for classrooms of new type construction.
   b. Are susceptible to damage.
   c. Hinder window ventilation.

Roller shades may be made of canvas, of lightweight fabric, or of oilcloth. Canvas is durable but it requires a strong spring roller, rolls up into a large clumsy roll, and is costly. Oilcloth shades tend to "pinhole" easily. Lightweight opaque shade fabrics having neither of these disadvantages can be obtained.

Full closure Venetian blinds, adjustable louvres, and jalousies — The ordinary type of Venetian blind is not satisfactory as a means of controlling light for projection purposes unless combined with a drape installation. New types of full closure Venetian blinds and jalousies are now available which do give satisfactory light control, but at present the installations are more costly than other satisfactory methods of light control.

The full closure Venetian blinds have broader slats than the common variety of Venetian blind and in some instances the slats are so constructed that they close to form a trap, thereby shutting out light more completely than the ordinary type of Venetian blind while still allowing a certain amount of air to circulate.

Adjustable louvres can be an effective method for controlling light coming through skylight and clerestory installations. Louvres may be of wood or metal and must be adjustable by levers or cranks installed conveniently in the classrooms. The types of louvres and jalousies made for installation outside buildings are not suitable for use in climates where snow and ice are common.

Summary — The Committee on Non-Theatrical Equipment of the Society of Motion Picture Engineers states:

"Standards of quality in educational projection ought, if anything, to be higher than those in the theatrical motion picture field. The pupil does not come to the classroom to be entertained, but to learn. In order to learn from the screen, he must watch it diligently, even though he may happen to be seated in a position that affords him only an oblique and distorted view of the picture. In order to learn from the sound, he must be able to understand reproduced speech without effort, and he must be able to obtain a true impression of the character of natural sounds and of the tone qualities of musical instruments when these are used in the films" . . .

VENTILATION

Classrooms should be so designed as to provide adequate ventilation when they have a maximum student load and are being used for projection purposes over prolonged periods of time. Adequate ventilation may be considered to be the same as that adequate for classroom use at any other time. The practice now almost universally accepted is that there should be a minimum air change of 10 cubic feet per pupil per minute.

Air intake and outlet areas should be placed so as to be unobstructed by light control devices.

ELECTRICAL INSTALLATIONS

Modern teaching practices in the classroom demand adequate wiring for both projection and sound as well as for general room illumination. . . .

Electrical switches and outlets — In addition to switches regularly placed near doorways for the control of overhead lighting, an additional room light switch should be installed on the wall of the classroom opposite the side of the room on which the projection screen is mounted. This switch is essen-

tial for providing immediate and easy control of room lights by the projectionist.

There should be adequate electrical outlets at the back, front and side of the classroom. One of these outlets should be near the usual location of the projection stand. Outlets in the front are needed for such equipment as overhead projectors, record players, and tape recorders. Outlets at the side of the room will be needed for small group work. . . .

Electrical outlets should deliver 110 volt alternating current and should be fused for no less than 20 amperes. Lines serving the outlets should be separate from the lines serving regular overhead lights. Circuits should be so designed as to allow simultaneous use of equipment in any number of adjacent classrooms without overloading the circuits.

All electrical outlets should be installed at convenient heights above the floor, probably not more than 36 inches above floor level. No outlet should be on or near the floor where it is relatively inaccessible and where it is vulnerable to dirt, floor waxes, and cleaning operations. Whenever possible, circuit breakers should be used rather than fuses.

Speaker conduit — A 3/4-inch conduit should be permanently installed to feed the electrical sound energy from the projector to the speaker since the two are usually located at opposite sides of the room. One speaker line outlet should be installed near the projector and a companion outlet should be located near the speaker stand on the opposite wall. This outlet may in turn connect with the permanent speaker of the school central sound system or may serve a portable speaker. This arrangement of outlets and connections eliminates the use of long runs of cable across the floor of the classroom.

Central sound conduit — Most new schools install central sound facilities. It is recommended that central sound wiring be carried in a 1¼-inch inside diameter conduit since such a conduit will permit the later installation of a coaxial cable which will be required for developments in the television field. The conduit should have an outlet in the front of the classroom near the place where equipment will be located which will be used in conjunction with the wiring installation.

ACOUSTICS

Classrooms should provide a satisfactory acoustic environment and good hearing conditions. A satisfactory acoustic environment has been defined as one "in which the character and magnitude of all noises are compatible with the satisfactory use of the space for its intended purpose." Noise is defined as any unwanted sound. Noise level for classrooms should be no greater than 35 to 40 decibels.

In the classroom, the acoustic problem is largely dependent on: (a) keeping the background noise low enough not to interfere with desired speech and music, and (b) controlling reverberation time so that it will be short enough to avoid excessive overlapping of successive sounds and yet long enough to provide some blending. These requirements, in turn, depend on proper acoustic treatment of the room itself and the control of noise from adjoining spaces.

Various rooms present different acoustical problems depending on such factors as the size and shape of the room, the furnishings, and the number of occupants. Reverberation time is the length of time necessary for a sound to die away after the source has stopped producing it. The limits of acceptable reverberation time for an average classroom of about 10,000 cubic feet ranges from 0.6 to 1.2 seconds. It is important that reverberation time be correct over a wide range of frequencies. A common unbalance is excessive reverberation at low frequencies and inadequate reverberations at high frequencies. The result is boomy yet dead, and music hearing is particularly poor.

Reverberation time can be controlled inexpensively by the proper application of sound absorbing materials on ceilings, walls, and/or floors. An experienced acoustical engineer should be consulted to determine the required acoustic treatment of various classrooms.

Problems of sound insulation may be most readily and economically solved at the time a building is being planned and constructed.

Sound insulation may be accomplished in part by skillful building lay-out so that classrooms are well removed from noisy areas such as gymnasiums, cafeterias, school shops, and music rooms. Further insulation may be gained through use of proper wall materials, floor insulation, heat ducts, and service lines. Nonporous and rigid constructions for partitions and floor slabs must be adopted if appreciable sound insulation between rooms is expected.

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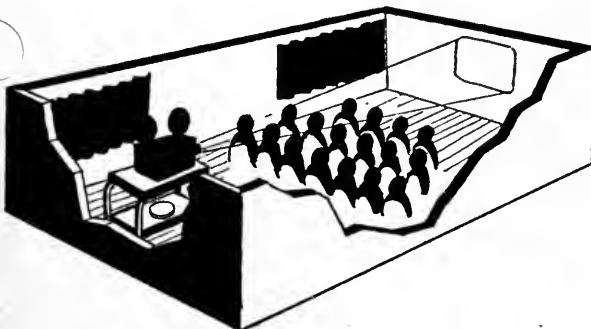
Effective room arrangement is a vital factor in the use of audio-visual projection equipment. In order that all students will receive equal benefit from viewing a presentation, the teacher should consider methods of seating, room darkening, ventilation, room acoustics, projector, speaker and screen placement, electrical outlets and switches.

Room Arrangement for Good Projection

1. *Seating the Students*

Regardless of the type of seats available, no student should be seated closer to the screen than twice the width of the picture, further from the screen than six times the width of the picture, or at a "viewing angle" greater than 30 degrees. The "viewing angle" can be controlled by limiting the length of any row of seats to its distance from the screen.
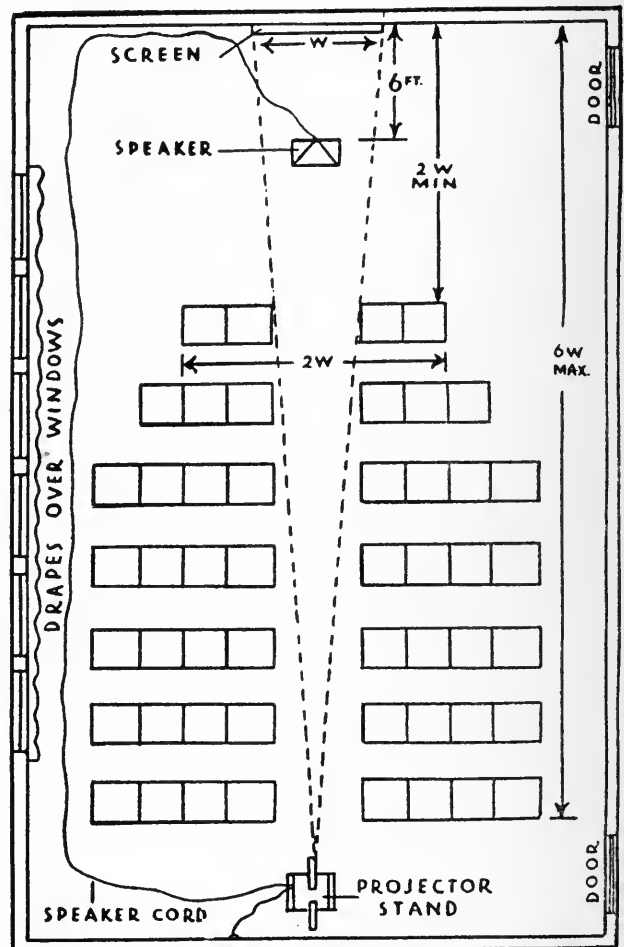
ROOM ARRANGEMENT

2. *Room Darkening*

Drapes hung on a track system above the windows, spaced at least 12 inches inside the window wall and extending 24 inches below the windowsill, is the most efficient and economical method of room darkening. Drape materials should always be flame-proofed and selected with an eye to good decorative effects. Pull-up curtains are an alternate suggestion. Effective darkening can also be accomplished by portable panels of plywood, or similar material, cut to a standard window size and fitted into windows before the showing. Window frames can be fitted with turn-screws to hold these panels in position. The first of the methods mentioned above is used in the Pasadena secondary schools.

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C. BUDGET AND FINANCE

A. Source of revenue. Major appropriation allocated to regular budgeting:

1. Salaries of professional staff derived from tuition fund.

2. Wages of clerical and other non-professional staff derived from special fund.

Finance

3. Moneys for buildings and permanent equipment derived from capital fund.

4. Moneys for materials, supplies, and other equipment derived from special fund.

B. Method of determining amount and allocation of funds to be determined in conference between administrator and director:

1. The cost of the program will depend upon the desired frequency of use, which, in turn, will determine staff, equipment, and material needs. These needs, as based on frequency of use, have been discussed in Chapter II, "Materials and Their Selection," Chapter III, "Utilization," and Chapter V, "Equipment and Housing." In order to maintain a *minimum* audio-visual program, schools should plan for an annual expenditure of $50.00 per teacher for material and equipment. For a *desirable* program, this expenditure should be increased to $150.00.

2. The program should be planned on a three-to-five year basis, incorporating needed amortization schedules.

C. Acquisition, utilization, and maintenance of audio-visual materials to be based upon sound educational procedures. Reliance on funds obtained from P.T.A. groups, student organizations, and money-making activities should be on temporary basis, with a view to making the entire program just as much a part of the total school program as the necessary facilities for any other department.

D. Differences necessary in ordering procedures for purchase and rental materials:

1. Purchase of materials and equipment should follow the occepted procedure for other materials and equipment within the school or system.

2. Rental of materials, such as motion pictures, constitutes a unique bookkeeping innovation with considerable flexibility required.

   a. The usual procedure, as with other supplies, of having all rental requests originate as official purchase orders, creates considerable confusion in the business office as well as in the audio-visual director's office. Purchase orders require considerable time to clear the business office, and order confirmations are returned there, rather than to the audio-visual director. This makes it necessary to ask teachers to request materials considerably more in advance than a flexible system demands. Cancellation of materials or inability to book materials on dates requested results in considerable consternation in the business office.

   b. Direct request by the audio-visual director for rental materials to the distributing library on an open account basis within an amount to be determined by the business office is the best way of assuring fast, flexible materials service.

   c. Requisitions can then be sent from the business office confirming the original letter sent to the library by the audio-visual director and confirmed to him. In this way, only those materials actually to be used are entered in the business office records, and confusion is kept at a minimum.

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What will the city-wide Audio-Visual Program cost? What budget provisions must be envisioned?

Contrary to usual estimates of the cost of a program of audio-visual education, recommendations included on the accompanying chart will be in terms *not of units of equipment* but rather as it should be:

The Ten-Year Goal in Audio-Visual Utilization: Its Cost

By HAROLD TABLER
See and Hear, Vol. 5, Issue 5. Jan., 1950. Pp. 36-37.

in terms of utilization situations—in terms of sound projections per class per week, or the numbers of times it is desirable to use transcriptions, the radio, the opaque or filmstrip projector, etc.

Just as a budget for all school activities must be a reflection of the total school program in terms of function so must the budget for an audio-visual program be the reflection of *utilization situations*, or better still, *use* situations through which improved instruction is the desirable outcome.

In interpreting this chart it can be assumed a basic library of these films numbers approximately 300 titles. (See chart on following page.)

Sufficient audio-visual equipment, including projectors, film strips, opaque projectors, sound projectors, etc. will be acquired in order to accomplish the number of *use* situations which are indicated in the second and third columns of the chart.

These Are the Basic Assumptions

In interpreting this chart certain basic assumptions must be made:

1. That in establishing a program of audio-visual education, *goals must be set up in advance.* It is not practical to assume that, while today we have no program, the mere expenditure of certain monies will in the short space of a year result in a going program.

2. That the ultimate goal of utilization situations indicated in the two columns will not be met at once, but rather will gradually be worked up to their being met at the end of a ten-year period.

3. That the per pupil cost in the second and third column of $2.69 and $5.38 will be appropriated over a ten-year period and that sufficient equipment and materials will be gradually added to the use of teachers over this ten-year period.

4. The fourth and last assumption is, of course, the most important one. That is predicated on interviews with teachers who have indicated that they, in order to completely "audio-visualize" their day-to-day classroom work will have need of materials and equipment *as often as is indicated in column three.*

Objective Is to Provide Equal Opportunity

This chart and its accompanying cost figures have been worked out in as objective a fashion as possible in an effort to answer the question: "What will the program cost if a certain level of utilization is to be provided all the teachers and their pupils?"

In these days of growing school populations and the increasing demands upon the community from which our schools draw their support, it is imperative that the audio-visual budget be based on sound assumptions and that progress be both measurable and continuous. The classroom is the focal center of this program.

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Those who sell and rent audio-visual materials have been reporting that their customers are complaining about the cost involved in the use of such materials. Those who get around to institutes, workshops, conferences and previews say they hear this complaint from ministers, directors, church school leaders and other church people.

Do Visual Aids Cost Too Much? An Editorial

By WILLIAM S. HOCKMAN
Educational Screen, Vol. 30. No. 1, Jan., 1951. P. 27.

leaders and other church people.

We believe that a saying of Herbert Hoover sheds some light on this situation: "We do not look at the facts as *they* are, but as *we* are." What are the facts?

We believe that few churches are spending as much on the total education program as they should. Here and there a church is an encouraging exception, but across the country as a whole few churches budget adequately for religious education and many of them do not put religious education costs in the budget at all. The church school pays its own way out of its "collections." Churches are expecting effective education for a few cents per month per pupil. When this situation prevails, how can the cost of visual aids in the average church amount to very much?

We ask those who complain about the costs of visual aids to compare their expenditures over a given year with what their church is spending for music; for printing, promotion, and postage; or for preaching. In most churches religious education has been living off financial crumbs, and if audio-visuals got most of the big ones the total would still not amount to much.

We suggest that the cost of audio-visual aids be considered on a per pupil basis. Suppose a $9 rental film is used to give a group of fifty young people a lasting impression of St. Paul. Is 18c per pupil too much to pay for this? If such use of a film makes the work of six teachers easier and more profitable over the next thirteen Sundays, has the film cost too much? We believe it has been a bargain.

We believe the current price for black and white filmstrips is quite reasonable measured against what

COST OF A TEN-YEAR PROGRAM
OF AUDIO-VISUAL EQUIPMENT AND MATERIALS

IN A SCHOOL SYSTEM OF 100 TEACHERS AND 3500 PUPILS
AT TWO LEVELS OF REGULAR CLASSROOM UTILIZATION

Equipment and Materials	A.	B.
16mm sound (or silent), *motion pictures* used in classroom:	Used once in 10 class meetings.	Used once in 5 class meetings.
Filmstrip or 2″ x 2″ slides used in classroom:	Used once in 10 class meetings.	Used once in 5 class meetings.
Projectors and minimum 3¼″ x 4″ slides in classroom:	Used once in 40 class meetings.	Used once in 20 class meetings.
Opaque projection use in classroom:	Used once in 40 class meetings.	Used once in 20 class meetings.
Radio & PA lessons, scripts, dramatizations in the classroom:	Used once in 10 class meetings.	Used once in 5 class meetings.
Recordings & Transcription use in classroom:	Used once in 10 class meetings.	Used once in 5 class meetings.
Museum units and Exhibits in classroom:	Used once in 60 class meetings.	Used once in 30 class meetings.
Field trips planned as part of classroom activity:	Participation in one field trip in 180 classroom meetings.	Participation in one field trip in 90 classroom meetings.
Approximate annual cost* for the 100-teacher school:	$9,399	$18,798
Approximate annual per-teacher cost, 100 teachers:	$93.99	$187.98
Approximate annual per-pupil cost, 3500 system enrollment:	$2.69	$5.38

*Spread over a 10-year period. It is assumed that these expenditures will achieve these utilization standards at the end of a 10-year period. All costs are based on current market prices of audio-visual materials and projection equipment.

they can help the educator accomplish. We should remember that these prices have not risen as much since 1940 as other items in our church or household budgets. W. L. Rogers of the Religious Film Association, says "we must stop to think of the fact that ten years ago the best religious films were renting on an average of $3.00 per reel and that today, at a time when all other prices have doubled, the best religious films are still renting for the same price or even less." Taking the higher quality of today's visual materials as a deserved gift, we are paying the same or less for visual materials than in 1940.

We doubt if any other dollar the local church spends buys nearly so much as the dollar invested in audio-visual materials to help devoted teachers accomplish more and better learning in less time. We believed that complaints about the cost of visual materials are more closely related to the church's general reluctance to face realistically the cost of adequate religious education than they are to the actual cost of audio-visual materials. Let's look at the facts as *they* are, not as *we* are.

(Editorial Note: Mr. Hockman wrote this editorial for church people. The facts and the point of view are just as pertinent for lay educators as religious workers.)

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1. *The Program Today.* Report from Alma, Michigan by Beatrice D. Kren, Director, Audio-Visual Education. P. 11.

The 1949-50 school year ended with a total budget of $326,397.38 of which $4,500 was used for audio-visual education. This audio-visual budget represents a per-teacher expenditure of $64.40 and a per-student expenditure of $2.20. About $800 of the total was spent to purchase equipment.

Audio-Visual Programs In Action

By
FORD L. LEMLER (Editor)
Ann Arbor: Michigan Audio-Visual Association, 1951. (Note: the selections below are excerpts from Michigan audio-visual programs. They show how seven school districts finance their programs.)

2. *Financial Resources.* Report from Battle Creek, Michigan by Marie McMahon, Consultant in Audio-Visual Aids. P. 15.

An adequate budget is a very important factor in a successful audio-visual program. Of a total budget of $2,252,830 for the Battle Creek Public Schools for the year 1950-51, $13,995.91 has been set aside for carrying out the audio-visual program. This is an expenditure of $41.29 per teacher or of $1.63 per pupil. Percentages of the audio-visual budget are: materials and equipment, 50.5%; salaries, 45.9%, and operation, 3.6%.

3. *Financial Resources.* Report from Dearborn, Michigan by William G. Hart, Department of Audio-Visual Instruction. P. 23.

The following facts will give a picture of the financial resources which sustain the educational program and assist in meeting its needs in audio-visual materials and services:

(1) Total school budget for 1949-50......$5,755,050.00
(2) Audio-visual budget for 1949-50...... 20,616.00
(3) Audio-visual expenditures per teacher for 1949-50.. 30.00
(4) Audio-visual expenditures per pupil for 1949-50 .... 1.16
(5) Portion of audio-visual budget spent for salaries 46%
(6) Portion spent for materials and equipment 44%
(7) Portion spent for operational costs.. 10%

4. *Financial Resources.* Report from Grand Rapids, Michigan, by Roger Zinn, supervisor of Audio-Visual Education. Pp. 51-52.

In 1949-50 a budget of $5,168,200 was provided for operation and maintenance of schools for the 20,795 children in average daily membership. Of this amount, $22,464 was spent for the Audio-Visual Department, $7,480 for salaries, $14,984 for instructional materials, rentals, equipment and maintenance. Also $12,400 was paid for audio-visual services provided by the Grand Rapids Museum. In addition to these amounts, the high schools and junior college, through departmental budgets, purchased specialized audio-visual equipment and rented additional films. The school year 1949-50 was the first year of operation of the audio-visual program under a supervisor of audio-visual instruction. The grouping of activities and the centralizing of responsibility are in progress and therefore the present work of the Audio-Visual Department represents but part of the total program. The decentralized program is being maintained to a great extent for the values inherent in that arrangement. Because of the fact that the program is in a state of transition and because of the decentralization, budget figures and percentages give but a partial picture.

Considering only the expenditures of the office of the supervisor of audio-visual instruction, the per-teacher expenditure for audio-visual materials for 1949-50 amounted to $30.30. Of the total audio-visual budget for the current year 28.2% is being spent for salaries, 49.1% for materials and new equipment, and 22.7% for operational costs such as delivery service and maintenance.

5. *Budgeting for the Audio-Visual Service.* Report from Holly, Michigan by Robert I. Nelson, Director Audio-Visual Education. Pp. 57-58.

For the school year 1949-50, Holly Public School's budget was $189,582.88. Of this amount, one-half of one percent, or $950.00 was used for audio-visual materials. This figure does not include the salary of the person in charge. Included in this figure, however, is the payment of an outstanding bill from the previous year of $325.00. The following tabulation is computed on the basis of $675.00, the total amount less the amount of the previous year's bill:

(1) Expenditure per teacher................$20.45
(2) Expenditure per pupil..................... .73
(3) Percent of audio-visual budget spent for equipment 60%
(4) Percent of audio-visual budget spent for materials 30%
(5) Percent of audio-visual budget spent for operation 10%

The school year 1950-51 will see a reversal of the percentage spent for equipment and materials for the reason that the most pressing equipment needs were met during the previous year.

6. *Financial Resources.* Report from Kalamazoo, Michigan by George E. Mills, Supervisor Audio-Visual Education and Curriculum. P. 67.

In recognition of the importance of audio-visual methods and materials in instruction, the first audio-visual budget was authorized for 1948-49. The considerable demand for, and excellent use of, these materials resulted in a budget increase of approximately 90% for the second year of the program. The following facts indicate the degree to which it has been possible to support the audio-visual program financially:

(1) Total school budget for 1949-50......$2,406,910.00
(2) Total audio-visual budget for 1949-50 .... 19,520.00
(3) Audio-visual expenditures per teacher for 1949-50 .... 48.50
(4) Audio-visual expenditures per pupil for 1949-50 .... 2.08
(5) Percentage of audio-visual budget spent for materials and equipment.... 58%
(6) Percentage of audio-visual budget spent for salaries............................... 38%
(7) Percentage of audio-visual budget spent for operational costs................... 4%

7. *Financial Resources.* Report from Niles, Michigan by Alf Rasmussen, Director Audio-Visual Department. P. 77.

Recognition of the importance of the audio-visual program in the Niles schools is shown by the increased allotment in the budget for each of the past seven years. A careful consideration of the audio-visual needs of the schools each year has been the basis for determining the budget. The following facts will give a picture of the budgetary support for our audio-visual program:

(1) Total budget for the school system, 1949-50 ....$580,000.00
(2) Budget allotment for audio-visual education 3,500.00
(3) Per-teacher expenditure for audio-visual work ....-............................... 32.00
(4) Per-pupil expenditure for audio-visual work 1.10
(5) Percent of audio-visual budget spent for salaries 5%
(6) Percent of audio-visual budget spent for materials and equipment............... 85%
(7) Percent of audio-visual budget spent for operating costs 10%

(Editorial Note: The above report from Michigan is designed to give the reader a realistic picture of sums spent for audio-visual education in one state. Instances could be cited of schools which spend more as well as schools which spend less.)

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D. COMMERCIALLY PRODUCED MATERIALS AND THEIR USE

The impetus given to the instructional aids program by training experiences of the military has served to emphasize an attendant problem, namely, the school use of sponsored materials. Although the types of aids offered for classroom use by business, industry and various organizations are numerous, most attention is being focused on the motion picture. This type of aid is costly and offers the most fertile field for sponsorship.

How to Judge Sponsored Films

By ARTHUR STENIUS
The Nation's Schools, Vol. 39, No. 2, Feb., 1947. Pp. 56, 58.

Nonsponsored sound pictures do not yet adequately meet school needs. The sponsored film aims to be welcomed because it offers a learning experience not otherwise available. Lent to schools without charge, it usually finds acceptance by the school administrator who is trying to make each budget dollar do the work of two. And many sponsored films are good ones, too often merely entertaining, it is true, but at other times definitely worthwhile as a teaching tool.

Because the schools may soon find themselves inundated with sponsored films, there is need for immediate consideration on a broad and collective scale of what the policy of schools should be in regard to use of sponsored materials. The decision on use must of necessity lie with the individual community but joint and published thought should point up the issues and probable outcomes involved. The single

school or small school system which is just now developing a strong visual education program can rightly expect to receive help and guidance from those who have had experience in this particular field over a comparatively long period of time.

To achieve group thinking and unity of opinion on the problems involved, numerous individuals identified with direction of audio-visual programs were invited to meet in Detroit last spring in conjunction with the Michigan Audio-Visual Conference. Invitations were extended by the chairman of the state audio-visual aids committee and, although the 23 persons who were able to accept the invitation represented administration of the instructional aids program in areas having a total population of approximately 17,000,000 people, it was the realization of all present that leadership in the field was represented only in part. The group spent the better part of three days formulating a statement of policy.

The report issued was introduced with an admission that sponsored materials will continue to be offered to schools, probably in increasing quantities, and that some of them now have and will continue to possess significant instructional values. The use of the best of these, however, involves furthering the sponsor's interest in some degree.

As public schools exist to cater to general rather than special interests, use of sponsored materials in the classroom can be justified only in terms of bringing to the learner a valuable experience that would otherwise be denied him. Constant care, therefore, must be exercised in weighing the educational value of a film against the furthering of the sponsor's special interest.

Although each local school system must accept responsibility for determining whether or not sponsored materials are to be used and must develop its own criteria for judging such materials, the group's report included two sets of criteria by which sponsored aids might be judged. The first of these gave seven considerations for determining educational value. The second constituted a scale for rating materials with respect to the emphasis on the sponsor's special interest.

It was hoped that the criteria would serve two practical purposes. Schools wishing to consider the development of criteria of their own can be helped by using the suggested scales as a basis for their work. Sponsors wishing to be of assistance to the schools can refer to the suggested criteria as a guide in attempting to produce teaching materials of the most acceptable kind.

The group also expressed two broader objectives which it hoped its work would serve. The first of these was the intent that the statement issued would tend to focus attention on the significance of problems springing from school use of sponsored instructional materials.

The second aim was that of providing a statement that would act as a basis for more comprehensive and detailed study of the problems involved. Reaction to the report which has already been evidenced gives reason to believe that the contribution of those who formulated the policy will not be without effect.

The two sets of suggested criteria by which sponsored aids may be judged are as follows.

Considerations for determining educational value of sponsored audio-visual materials:

1. To what degree do the objectives of the material harmonize with the educational objectives of the school?
2. Is the material:
   a. Accurate and authentic?
   b. Representative in its selection of fact?
   c. Truthful and sincere in treatment?
3. Does the material present general understanding, facts, processes or methods, or does it present a particular point of view or promote a specific brand?
4. To what extent is the material sound in terms of educational philosophy?
5. To what extent is the material significant in the sense that it promotes an educational program better than any other material generally available at the time?
6. Is the material adapted to the needs, interests and the maturity level of the various pupils who will use it?
7. To what extent is the sponsor's relationship to the materials clearly known and acceptably stated?

Suggested scale for rating audio-visual materials with respect to the emphasis on the sponsor's special interest:

1. Materials dealing with a general field of accepted educational value, without reference to any specific make or product, with a single statement of sponsorship.
2. Materials where the sponsor's interest is shown as an integral part of the material, without emphasis on a specific brand or trade name.
3. Materials dealing with a product exclusive to one company but without reference to a trade name.
4. Materials making direct reference, either pictorial or in text, to a specific product.
5. Materials making repeated reference to a specific product to a point where the product is the focal point of the material.
6. Materials employing distortion of facts.
7. Materials with purposeful misdirection of conclusions.

E. DISTRIBUTION

After materials have been evaluated, purchased, and properly accessioned in the a-v library, they are ready for use. Teachers throughout the school system must be informed of their availability. This leads to the preparation of a catalog with descriptions of materials which can be requisitioned for use. Good catalogs invariably lead to extended and wiser utilization of materials.

Making Materials Available

By JAMES S. KINDER
In, Audio-Visual Materials and Techniques. New York: American Book Co. 1950. Pp. 545-49.

Requisitions for materials are handled in one of two ways: teachers submit their requisitions directly to the central department of audio-visual materials, or building requisitions are sent to the central department. In the latter case, teachers turn their requisitions over to a building coordinator of a-v aids who in turn passes a composite building requisition on to the central department. The latter method is preferred. Schools which rely on renting materials from sources outside the school system follow much the same procedure.

Materials are received by the school at some central office or room, such as the school office, book-room, supply room, or receiving room. Naturally these materials should arrive well in advance of their scheduled use so that teachers can preview them and plan intelligently for their use.

Elsewhere reference was made to projector operation by teachers, students, and other personnel. Operators, too, must be apprised in advance of showings. Weekly mimeographed schedules of what films will be shown, when, and where, and by whom are recommended for each building. Teachers are thereby informed of the materials which their colleagues are using, and of materials which they might like to know about.

One or sometimes two reports are involved in each motion-picture showing. Teachers are usually asked to fill out a report which indicates how they used the film, and to give an estimate of its value for the purpose it was used. In schools which use student operators, the supervisor of operators usually asks each one to fill out a brief report stating the number of people present, where the film was shown, the condition of the film when he finished with it, and probably a statement regarding the condition of the projector.

Records and Forms. Any well-organized and administered audio-visual program will require the use of various records and forms. The variety and extent of such records will depend upon many factors, such as: number of buildings in the school system, whether the school owns or rents most of its materials, amount of money available for rentals, whether schools evaluate materials prior to class use, type of operators used, whether buildings have a separate director or whether audio-visual administration falls on the principal, and whether films and other materials are booked by semesters or "spot" orders. Standardized forms facilitate the work of administering the program and assist in getting the right materials to the proper place at the correct time. Records will form a backlog of information of great value in making future purchases or rentals, formulating budgets, bringing about more intelligent utilization, and putting the entire program on a business-like basis. Needless to say, records and reports should not be sought unless they serve some useful purpose. The people who use the materials have enough to do without becoming involved in any unnecessary red tape.

It is not practical to show specimens of all forms used in an expanding a-v program, but some forms are so universally used and so nearly indispensable that it seems advisable to call particular attention to them. The treatment here is suggestive and representative, not comprehensive.

Every school finds it necessary to assist the teachers in placing their requisitions for films, filmslides, slides, and transcriptions. Good administraton necessitates the consolidation of these requests into as few orders as possible for each building so that innumerable small requisitions are not sent to the central office or to rental agencies. Naturally, consolidation of orders facilitates accounting and financial arrangements. The principal of each building or the director of a-v education should send a bulletin to every teacher setting forth the school's policy regarding the purchase, rental, and requisition of materials. Each teacher should then supply the office with a written statement of needs. If the city provides its own library of materials, the teachers' requisition form is simple. It need consist of nothing more than a mimeographed or printed sheet asking for the following information.

COMPLETE TITLE	CAT. NO.	TYPE OF AID (FILM, SLIDE, ETC.)	DATE NEEDED	
			FIRST CHOICE	SECOND CHOICE

Form for Requesting Materials from the School's Own Audio-Visual Distributing Library or Center

If materials are to be rented from sources outside the school-owned library, additional information will be needed. The form should include the following:

TITLE AND CAT-ALOG NUMBER	TYPE OF AID	NAME AND ADDRESS OF SUPPLIER	DATE NEEDED	
			FIRST CHOICE	SECOND CHOICE

Form for Request of Rental Materials

As soon as all requisitions have been submitted by teachers, the building director of the a-v program consolidates the orders into a building requisition which is sent to the central library. A consolidated rental order is made up in the same manner.

Ideally, the building principal or a-v director sends the teachers concerned a confirmation of their requests as soon as he receives this information from the library or purveyor. This arrangement keeps each teacher fully informed as to just what he can expect in the way of materials. Instead of notifying each teacher separately of the status of his requisition, some schools prepare a "Master Chart" of materials ordered for the semester or month. This may also be done on a weekly basis. It is then possible to schedule projectors and other equipment without confusion. A weekly bulletin may be a simple compilation such as the following:

Complete Title	Teacher—Room—Subject	Type of Material	Date	Period
How to Conduct a Meeting	Jones-115-English 11B	Sound film	3, 4, 5	5, 6
How Nature Protects Animals	Evans-202-Gen. Sci. 9A	Sound film	7	4, 7
People of China	Phillips-127 Soc. Studies 10B	Slides	5	1, 2
Here is China	Phillips-127 Soc. Studies 10B	Sound film	6	3

A Weekly Schedule Which Shows What, When, and Where A-V Materials Will Be Used in the Building

Editorial note: Distribution has been and will continue to be one of the imponderables of audio-visual administration. The efficient organization of materials, the ease of communication, the provision of sufficient duplicates of popular items, and the avoidance of bottlenecks in the flow of materials characterize successful distribution practices. Teamwork between teachers, building coordinators, and the central office is essential if the knowledge in films, slides, filmstrips, and recordings is to be brought to the learner. ❍ ❍ ❍

A. *The distribution of moving pictures*—There are two general methods which have been adopted for the distribution of films by city school departments of audio-visual education. The first we may call the *"circuit" method,* and the second the *"special-order" method.* Each of these two methods, while quite distinct in purpose and operation, are varied in practice, and in certain cases both methods are used in the same department.

Methods of Distribution of Audio-Visual Materials

By F. DEAN McCLUSKY

1. The circuit method of distributing films may be described in this fashion. A department places a number of schools on a "circuit." The film is then taken from school to school on the circuit. This service is continued so that each school receives regular service at regular intervals throughout the school year. The department is responsible for (1) providing suitable films, (2) keeping them in good order, and (3) transporting them from school to school. It is difficult to select films for school circuits that will correlate with the course of study because the person making the selection has to construct in advance a film schedule which is inflexible, whereas the program of study varies. At present, even in the case of a curriculum committee whose purpose is to select films which will correlate with the course of study, all selections are arbitrarily made, are dependent on film procurable, and are based on the assumption that the different schools on the circuit will be ready for a particular film at the time designated. The sources of films for distribution on the circuit may be classified under three headings: first, rental; second, loan; and third, films from the department's library.

2. The special-order method of distribution is simple in operation. A teacher or principal in any school in the city phones to the department, or communicates with the department in another manner and orders a film to be sent to them on a certain day and hour for exhibition. The teacher is limited to those films available at the department and she depends on the department to furnish film in good condition and in most cases to transport the film to and from the school.

Departments using the special-order method of distribution have adopted four rather distinct practices in providing films to be ordered. First, films may be purchased outright by the department and placed at the disposal of the schools; second, film may be borrowed by the department for a year or longer from government bureaus

> Remember the 4 R's of Audio-Visual Education:*
>
> Right materials and equipment get to the
>
> Right place at the
>
> Right time and are used in the
>
> Right way!
>
> *Setting Up Your Audio-Visual Education Program. P. 16.

and national manufacturing concerns and distributed to the schools which desire to make use of such material; third, the department may rent or lease for a period of time reels which are listed along with those already available at the department; fourth, the department may act as a broker by ordering films for schools from exchanges, university bureaus, and other distributing agencies; and fifth, the department may join a cooperative library.

3. The special-order method of distribution serves a larger percent of schools in cities than does the circuit method.

The circuit method is somewhat more effective than the special-order method in terms of the number of films sent to each school per month. When one considers the fact that the circuit method forces films on the school at specified dates and that the special-order method is dependent upon orders from teachers who desire films to be shown, it would appear that the special-order method is functioning in a way that is to be highly recommended.

B. *The distribution of slides*—It is a common practice to distribute slides in sets. Stereographs are also sent out in sets, very frequently accompanying exhibits. At Cleveland, Detroit and St. Louis, the exhibits which are circulated among the schools are accompanied by pictures and reading matter. Such exhibits are called collections. Pictures are frequently sent in sets. The miscellaneous material, such as charts, models, and booklets, are grouped and distributed in the same fashion as slides, stereographs, and pictures. Each city has its own particular method of making up sets of slides, exhibits, stereographs, and pictures, and works out its own best method of packing and shipping these materials.

C. *All materials other than films* are distributed by the special-order method. The length of the loan varies from two days to two weeks,—the central tendency being one week. There are three methods used to distribute materials as far as transportation is concerned; one is by school truck or department truck, the other is by messenger sent out by the department, and the third is by a messenger from the school.

F. EQUIPMENT

FUNCTIONAL HOUSING

In housing the audio-visual educational program, a proper psychological setting should be an important consideration so that the audio-visual materials can be used most effectively. A pleasant and harmonious setting can best be accomplished by including attractive surfaces as well as useful, ample, and well disposed spaces.

Equipment and Housing

In, AVID of Indiana. Handbook for Audio-Visual Program. Indiana University, Audio-Visual Center. 1948. Pp. 18-19.

Utilization of audio-visual materials will be most effective when they are organized functionally and housed so that the user will not waste valuable time and energy and will not lose his spark of interest because of disorganization.

BASIC EQUIPMENT

In many instances materials and equipment may be considered synonymous, such as models, maps, and charts. For the most part equipment may be limited to:

A. Audio
  1. Radio—AM and FM.
  2. Recorders—tape, wire, disc.
  3. Public address and inter-communication systems.
  4. Transcription and record players.
B. Sound and Silent Projection Equipment
  1. Motion picture.
  2. Slide ($3\frac{1}{4}$ x 4 and 2 x 2).
  3. Slidefilm.
  4. Micro.
  5. Opaque.
  6. Projector for cellophane or celluloid transparencies.
  7. Three dimensional.
C. Television
D. Photographic Equipment

Optimum value will result from the use of audio-visual materials in the classroom. Classrooms should furnish the environment necessary for rich, vital, stimulating, and interesting experiences. This would emphasize the necessity of including laboratory and workshop space, even if only on a small scale, for each classroom. The overall design and various appointments must furnish favorable conditions for best possible use.

BASES FOR DETERMINING EQUIPMENT NEEDS

There will be a considerable variation between school systems and among teachers within a school system in the frequency of use of the different audio-

EQUIPMENT REQUIRED TO MEET LISTED FREQUENCY OF AVERAGE USE IN A TWELVE-GRADE SCHOOL WITH THIRTY TEACHERS			
Type of Equipment	Frequency of Average Use	Ratio of Equip't to T'chers	Equip't Req. for 30 T'chers
Motion Picture Proj.	During 1 of each 10 class per.	1:10	3
Slide Film Proj.	During 1 of each 10 class per.	1:10	3
2 x 2 Slide Proj.	During 1 of each 10 class per.	1:10	3
3¼ x 4 Slide Proj.	During 1 of each 15 class per.	1:15	2
Opaque Proj.	During 1 of each 15 class per.	1:15	2
Record Player—Dual Speed	During 1 of each 10 class per.	1:10	3
Screens	One wall screen in each classroom		30

visual materials in the various subjects and on the different grade levels. In planning for equipment, it is necessary to ascertain the needs of all the teachers and then arrive at an average use. Such an average use, in the case of motion pictures, for example, could be the use of motion pictures during one of each ten periods. In this case, one projector would be required for each ten teachers. In the case of the desired use of motion pictures during one of each five periods, then the projector-teacher ratio would be one to five. If the use is to be one of each twenty periods, then the equipment-teacher ratio would be one to twenty, etc. The following table illustrates the planning of the required equipment for a twelve-grade school of thirty teachers, based on the listed frequency of average use.

Such a table as described above should be prepared by the school system director of audio-visual materials, following consultation with the administrative and supervisory staff and teachers, on the frequency of average use desired for each type of material.

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PROJECTION SCREENS

It is recommended that every regular classroom be provided with a projection screen. A few teachers may not use projected pictures, but teachers are frequently shifted from room to room and it is essential that every room be so equipped that any teacher assigned to the room will be encouraged to use desirable audio-visual materials.

The Why of Classroom Planning

In. Planning Schools for Use of Audio-Visual Materials — No. 1 Classrooms. Buildings and Equipment Committee of DAVI, Ann Hyer, Editor, Dept. of Audio-Visual Instruction, National Education Association, July, 1952. Pp. 20-32, passim.

The classroom screen should be of a type that can be made ready for use quickly and easily. It should be so housed that, when not in use, it will be protected from dirt and damage and be out of the way of other classroom activities. A pull-down screen in a roller case mounted on wall brackets will meet these requirements with effectiveness and economy. Other types of installations, such as a flat mounted screen behind a movable chalkboard or bulletin board, are also satisfactory if readily accessible. Tripod mounted screens provide a certain amount of flexibility in placement but are not recommended for general classroom use because such mounts are accident hazards and are space consuming.

The screen should be placed so that its lower edge when fully extended is at the eye level of seated pupils, and so that no installation, such as ceiling lights, will interfere with the viewing. It should be placed in the room so that its surface may be darkened regardless of time of day or outside light con-
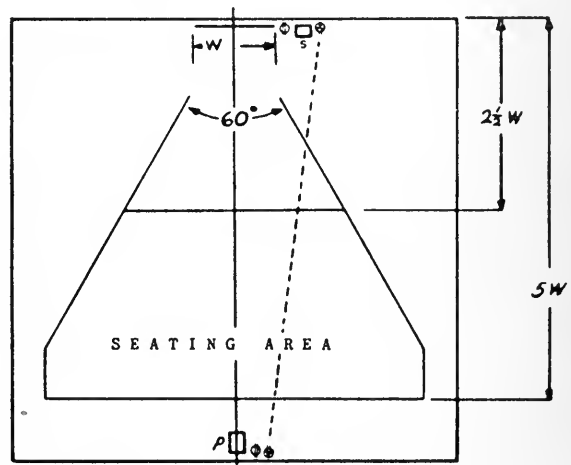
SYMBOLS

⊕ STANDARD DUPLEX OUTLET - 110V. A.C.

⊕ SOUND WALL SOCKETS

--- CONDUIT

P PROJECTOR

S LOUD SPEAKER

W WIDTH OF SCREEN

When viewing projected pictures, the audience should be no closer than 2½ image widths and no farther than 5 image widths from the screen. No persons should sit more than thirty degrees from a line perpendicular to the center of the screen.

ditions and so that it can be seen readily from all parts of the pupil-seating area at no greater angle than 30 degrees from a line perpendicular to the center of the screen. This condition is approximately fulfilled when no row of seats is wider than its distance from the screen. No viewer should sit farther from the screen than five times the image width nor closer than 2½ times the image width.

Screen Size

A projection screen 70 inches by 70 inches is recommended for classrooms of usual size. At a distance of 30 feet the image from a 16-mm motion picture projector using the normally supplied 2-inch lens or of a 35-mm filmstrip projector using the normally supplied 5-inch lens almost fills the screen.

Square screens are recommended because they are more suitable for use with vertical slides and the variety of picture shapes encountered when using the opaque projector. The pictures tend to "spill over" the edge of a rectangular screen.

Although a somewhat smaller screen, no less than 50 inches wide, will usually satisfy the requirement for motion pictures that no viewer be farther than five times the width of the image from the screen, the 70-inch screen is recommended because it is needed for the opaque projector, for use with still pictures containing fine details which must be held on the screen for prolonged study, and for the use of motion pictures and filmstrips with groups of 35 persons or more.

Projection screens for use by small groups of 6 to 12 students working in project areas may, of course, be correspondingly smaller. Screens 36 to 40 inches square and mounted in spring-roller cases are satisfactory for such purposes.

Screen Types

Screens are of three types: the "white matte" screen, the beaded screen, and the "daylight" type screen. Detailed information on the characteristics which should be considered in selecting screen types are discussed in such publications as *Recommended Procedure and Equipment Specifications for Educational* 16-mm *Projection* (15: 4-13) and *The Architects Manual of Engineered Sound Systems* (19: 81-93).

Matte screens—Matte screens have smooth white surfaces. Many authorities recommend the matte-white screen surfaces for square classrooms, stating that the image can be seen clearly and without distortion from all parts of the classroom seating area. The reflected light is distributed more uniformly from a matte-white screen than from a beaded screen, but the image on a matte screen surface is less brilliant than on a beaded screen surface for persons sitting at an angle of less than 22 degrees from the center of the screen.

Beaded screens—Beaded screens have a surface covered with small glass beads which have the property of reflecting and at the same time refracting light in such a way that a high proportion of the light is sent back in the direction from which it comes.

Because of the greater reflective power of the beaded screens a brighter image is obtained than on a matte screen for persons seated not more than 22 degrees from the center of the screen. However, the picture brightness tends to fall off rapidly as the viewer moves out from the center of the screen so that at angles beyond 22 degrees the image on a beaded screen is less bright than on a matte screen.

As beaded screens are used there is a tendency for the beads to be knocked off, thus lowering the over-all reflective power of the screen and producing a surface that gives a blotched appearance to the reflected image.

"Daylight" screens—Several types of screens are on the market today which claim to permit satisfactory projection of pictures in the classroom without special light control installations. This group includes the hooded screen or shadow-box type, the rear projection screen, and screens using various improved surface materials of glass, silver, plastic over aluminium, etc. To date, none of these can be recommended as a substitute for room light control; however, they are often useful for small group projection. Through classroom experience audio-visual directors have found the following advantages and limitations:

1. Advantages
   a. Makes possible some projection in a lighted room.
   b. Facilitates use with a small group within a classroom or in rooms accommodating more than one grade.
2. Limitations
   a. Screen size is limited in most types to 40 by 40 inches or less, thus limiting the size of audience to less than class size.
   b. The small screen size eliminates use of most opaque projectors and of large detailed images.
   c. Some types will produce a satisfactory image only for those persons sitting in a very limited area of the classroom directly in front of the screen. For other seating locations the picture is distorted or insufficiently illuminated.
   d. Some types, such as those of glass, are breakable and/or heavy, thus reducing the degree of portability.

PROJECTION STANDS

It is advisable to have a movable projection stand in each classroom. A projection stand is a useful and adaptable piece of classroom furniture capable of holding projectors, tape recorders, record players, radios, and other objects used in the classroom.

The stand should be capable of holding 85 to 100 pounds, and should remain steady in spite of the vibration of a running 16-mm sound projector. The stand should be from 4 to 4½ feet above the floor. The inclusion of one or two shelves, hooks for cables, and film can pockets will increase its utility. Dimensions of the top of the stand should be not less than 12 inches by 24 inches. The stand should be mounted on three-inch to four-inch rubber wheels and should be equipped with adequate braking facilities so that it will stay in position even if used on an inclined floor.

SPEAKERS

Speakers permanently installed in the walls of the classroom are not generally recommended at this time. The efficiency of many speakers tends to decrease with age. Furthermore, a speaker which will match the impedence and power output of one piece of equipment cannot be used indiscriminately with other equipment. For these and other reasons it is best at the present time not to install a permanent speaker but rather to install a speaker conduit as recommended . . . to eliminate the stringing of long cables across the floor of the classroom. (See Section B, Part VI, this volume.)

It is often desirable to install a bracket or drop shelf, which will fold against the wall when not in use, and which will be of sufficient size to hold any normally used classroom type of speaker. Ideally, the speaker should be near the screen and at least three feet above the heads of the audience, and tipped slightly forward so as to aim the center of the speaker cone at the center of the audience rather than at the back wall or toward windows.

Display facilities—Classrooms should be supplied with adequate vertical and horizontal display space. It is difficult to define what is sufficient since the needs depend on the type of teaching and the nature of the learning activities which will take place in the room. For this reason it is advisable to use flexible installations that can be changed readily to increase or decrease the area of display facilities or to use dual purpose installations.

Vertical display facilities, such as chalkboards and tackboards, should be installed at pupil eye level and should be well lighted. Display boards should have light colored surfaces. Two methods of providing flexibility in the amount of vertical display facilities are (a) by the use of swinging chalkboards and bulletin boards which consist of a number of wings or leaves which can be turned at will, and (b) by the use of counterbalanced chalk and bulletin boards that can be raised to expose additional chalk or bulletin board areas.

Horizontal display areas should provide for the exhibition of objects, models and exhibits. Here again dual purpose fixtures can be utilized. The most common types are (a) those that pull out from a recess in the walls and (b) hinged shelves that can be raised and locked into position. This type of display surface can also serve as a cover for storage bins, drawer space, or shelving.

Storage chests for posters or maps, when mounted on gliders and fitted with durable table tops become movable display space, room dividers, and work tables. Where storage closets extend into the classroom or workroom area the protruding walls of these closets can be used for additional vertical display boards.

Storage facilities—Adequate storage space in the classroom is required for such commonly used materials as flat pictures, charts, posters, maps, filmstrips, construction materials, and slides. Such facilities as the following should be considered:

1. Legal size file cabinets.
2. Chart cabinets in which pictures, posters, and charts up to 36 by 36 inches can be stored flat.
3. Storage cabinets for roll maps.
4. Cabinets and drawers of various sizes to hold miscellaneous supplies and materials.

Although audio-visual equipment circulated among classrooms will usually be stored in the school audio-visual center, storage facilities that can be locked should be provided for equipment that is temporarily or permanently assigned to a room. Storage facilities 18 inches deep, 40 inches long and 24 inches high, will usually be sufficient for a single room.

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G. EVALUATION OF AUDIO-VISUAL PROGRAMS

Evaluation is an important aspect of any on-going enterprise. Educators in general have long been aware of this fact and have spent considerable time and effort examining their educational programs in an effort to test the validity of their theories of teaching and the effectiveness of various organizational and administrative plans and procedures. Persons in charge of audio-visual programs should also be aware of the importance of stock-taking and should make provisions for doing so.

A Yardstick for Evaluation

By PAUL WITT
In, Educational Screen, Vol. 27, No. 6, June, 1948. Pp. 267, 290-93.

During the past few years educators and laymen alike have been urging greater use of audio-visual materials and methods in the

schools. They have said these materials and methods improve instruction and greatly increase its effectiveness. Boards of education are asked to allocate rather large sums of money for the establishment and support of audio-visual programs.

Although the development of these programs has not been as rapid as many have hoped, quite a few school systems already have audio-visual directors. A steadily growing amount of materials and equipment is being acquired by schools. Teacher interest is definitely on the increase. Boards of education are supporting these new programs.

These facts are cause for satisfaction, but there is also cause for concern. Acquisition of equipment and materials, development of teacher interest, and securing financial support are not enough. Materials and equipment *must be used* in order to have any effect on the learning of pupils. They must be used *with understanding and skill* to realize the full benefits claimed for audio-visual instruction.

Obviously, a major responsibility of persons in charge of audio-visual programs is to make certain that the potential contributions of audio-visual materials and methods to learning are fully realized. This means they must organize and administer their programs so teachers have the materials and equipment they require in their teaching, and they must help teachers utilize these materials effectively. They must be sure they are moving toward their goal—more effective learning through the skillful and intelligent use of audio-visual materials and methods.

To be most effective, evaluation should be a group enterprise. Everyone concerned with the development of the audio-visual program should participate in the evaluation of it—teachers, pupils, parents, and administrators. The nature and extent of participation will vary for each group, but each should have some part in the development and application of the measuring instrument. The person in charge of the program bears the heaviest responsibility for evaluating the program and it is his duty to provide the needed leadership. In addition to a more thorough and accurate appraisal of the program, other values are gained from group evaluation, not the least of which are the increased interest of teachers and the strengthened community support for the program.

How does one tell how he is doing? How does he determine what he does next? Obviously a yardstick of some kind is needed, something for measuring progress, for appraising successes and failures. Although an audio-visual director and the people working with him will want to develop their own evaluative instrument, the following criteria for evaluating audio-visual programs are presented as a base from which they might start. These criteria are valuable in that they focus attention on the important aspect of the organization and administration of audio-visual programs.

CRITERIA OF EVALUATION

1. *The use of audio-visual materials should be so organized and administered that these materials function as an integral part of the educational program.* A good audio-visual program is an organized attempt to utilize certain instructional materials such as films, slides, pictures, charts, maps, graphs, and realia, and certain instructional techniques such as the school trip and the radio broadcast in providing educational experiences for pupils. A good audio-visual program is *not* something distinct and separate from the major educational enterprise carried on in the school. It is, rather, an important aspect of the principal business of the school.

Unfortunately, in some school systems the audio-visual program is established as a separate activity. Films are shown to large groups of pupils with no attempt to integrate the film experience with other learning activities of the pupils. School trips are nothing more than glorified picnics reserved for graduating classes, and kept in store for them until late in their educational careers. All of the audio-visual materials introduced into the pupils' educational experiences are brought in either incidentally or accidentally.

Even many schools using audio-visual materials in the regular instructional programs fail to achieve desirable results. There are many reasons for this. Teachers may not understand the functions of these materials and they may be unskilled in their use. Proper materials may not be available. Distribution schedules may be ineffective. Many other factors may be responsible.

Intelligent, efficient administration will be directed toward achieving effective use of audio-visual materials in an on-going educational program.

2. *Provision should be made for participation of the entire school staff in the development of general policies and procedures.* Advocates of democratic administration maintain that all persons who must abide by a policy should have a voice in its formulation. It is reasonable that the same attitude should be taken toward general policies and procedures for administering audio-visual programs. A person who has an opportunity to help shape policy and procedure will understand them better, will appreciate the need for them, will have more respect for them, and will feel a sense of responsibility for their successful administration. Just the opposite kind of reaction can be expected from a group which has had no voice in the making of policies and procedures. It is logical, therefore, in the administration of an audio-visual program to provide for participation of the

entire school staff in the formulation of policies and in the development of procedures.

3. *Audio-visual materials should be selected in terms of recognized educational needs.* If audio-visual materials are to be used effectively in the educational experiences of pupils, they must help meet the educational needs of pupils. There is no reason for showing a film to a group of pupils unless they need to know something depicted in the film. It is equally unfortunate for pupils to need information in a film that is not available. Unless audio-visual materials are selected on the basis of the recognized educational needs of pupils, the teachers will find that much, if not most, of the materials selected will be of little use. It is extremely important, therefore, that all audio-visual materials be selected to meet clearly determined educational needs of pupils.

4. *Audio-visual materials should be selected by those who use them.* To be of any educational value audio-visual materials must be used. A well-stocked materials library contributes nothing to the growth and development of the boys and girls if the materials lie unused on library shelves. Since teachers are chiefly responsible for the use of these materials and because teachers know as well as, if not better than, anyone else what the educational needs of the pupils are, teachers should play a major role in the selection of audio-visual materials. Pupils, too, should have a share in the selection process. If the teachers and pupils are accorded this opportunity and responsibility, not only is it likely that the most educationally valuable materials will be selected, but also it is likely that these materials will be used most efficiently and effectively.

5. *Audio-visual materials should be made available where they are needed at the time they are needed.* No matter how desirable it may be to use a certain set of slides in a particular learning experience, nothing is gained unless the slides are available at the particular moment they are needed. To use the slides too soon or too late greatly reduces their contribution to learning. In a modern curriculum where learning experiences are based on the emerging needs of boys and girls and where these experiences are developed cooperatively by teachers and pupils, it is impossible to anticipate the need for specific instructional materials very long in advance. As a result, it is important to develop libraries of materials from which teachers and pupils can obtain what they need on very short notice. The difficulties of doing this are fully recognized, but they must be overcome if audio-visual materials are to be used effectively.

6. *Provision should be made for helping teachers acquire skill in the use of audio-visual materials.*

In the final analysis, the effectiveness of audio-visual materials depends upon the way in which teachers use them. This means that teachers must understand the purpose and functions of these materials. They must know how to select the right ones for a given purpose. They must be able to use them skillfully. They must also be able to operate any necessary equipment. It is vital, therefore, that arrangements be made for helping teachers acquire these skills and understandings.

7. *Provision should be made for regularly evaluating the use of audio-visual materials.* Although audio-visual materials can be powerful tools in the hands of intelligent and skillful teachers, it is quite possible to use them at the wrong time, to use the wrong ones, or to use them when some other type of instructional materials should be used. Consequently, it is important that administrators, supervisors, teachers and pupils critically evaluate the use of these materials. This evaluation may range from the subjective opinion of a pupil to the results of a well-planned and carefully conducted experiment, but there should be an organized and constant effort to appraise the effectiveness of these materials in the teaching and learning process.

8. *The development of the audio-visual program should be based on long-term continuous planning.* Careful and thoughtful planning is essential to the success of any enterprise. Most schools are not financially able to establish a complete audio-visual program in a single year. This is not necessarily an understandable situation. It takes time to develop in teachers an understanding and appreciation of the functions of audio-visual materials of instruction and to help them acquire skill in their use. It would appear, therefore, that it is financially necessary and pedagogically desirable to develop an audio-visual program over a long period of time. Consequently, provision should be made for continuous long-term planning so that a sound program will result. Every effort should be made to make every step in the process a definite advance toward the goal of a complete and effective program.

9. *Budgetary appropriations for the audio-visual program, based on considered educational needs, should be made regularly.* An audio-visual program costs money, and a good audio-visual program costs a lot of money. Provision must be made, therefore, for providing adequate financial support regularly for this program. In many schools it is not unusual for the audio-visual program to be supported either partially or entirely by funds donated by parent or pupil organizations rather than by appropriations in the school budget. Such financial support, fluctuating from year to year, makes it impossible to plan for steady development of the program. It is never

known how much money will be available or when. Furthermore, this sort of financial support usually means that the program can grow only in those schools where the pupils come from economically favored homes.

Strong audio-visual programs cannot be built on wavering financial foundations. A source of regular financial support must be provided. Since the audio-visual program should be a legitimate part of the regular educational enterprise of the schools, it is only logical to expect the board of education to provide the necessary financial support for the program. Of course, any appropriation for this program as for any other aspect of the educational undertaking must be made on the basis of real educational needs.

10. *Adequate personnel, space, facilities and equipment should be provided.* Success cannot be achieved without the services of interested and competent personnel. The number of personnel will vary with the size of the system, but there will always be a need for someone to provide the leadership required to generate teacher interest in the use of audio-visual materials and to help teachers make effective use of these tools for learning. If the system is large, there may be a need for a director, one or more central office workers and building coordinators who are given time during the school day in which to perform their duties. In small systems one person might discharge all the functions performed by several people in a large system, perhaps even on a part-time basis. However, in any situation competent personnel are essential to the development of a successful program. Audio-visual materials are effective instructional tools only in the hands of trained teachers. Well-organized audio-visual programs likewise require the efforts of capable personnel in order to produce results.

Space is needed for storing materials and equipment and for performing such functions as servicing and repairing equipment, booking materials, previewing films and training teachers. Broadcasting and sound recording studios, special projection rooms and production laboratories are also desirable. Special facilities, including dark shades and electrical outlets, are essentials in classrooms and special projection rooms if efficient and effective use is to be made of projected materials. A long list of equipment would also be compiled if one were to mention all of the devices needed in a modern audio-visual program.

Fortunately, much can be done to improve learning through audio-visual instruction even under severe limitations in space, facilities and equipment. However, schools should not use this fact to excuse the physical inadequacies of their audio-visual pro-

grams but should strive to meet the standards implied in this criterion.

* * *

How are we doing? Where do we go from here? A look at the audio-visual program in the light of the foregoing criteria or in terms of an evaluative instrument developed therefrom will give answers to these important questions. These answers are needed if intelligent effective direction is to be given to the development of audio-visual programs.

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H. PERSONNEL

The group focused on this problem for one principal reason. There are clear signs that many states are now confronting or will shortly confront the problem of establishing state-wide certification standards of audio-visual workers, particularly for audio-visual directors in school systems. If this observation is accurate, then it seems desirable to assist state groups in their work by passing along suggestions of a representative national group such as DAVI.

Professional Education

A Report from the DAVI Boston Conference Proceedings 1952. Department of Audio-Visual Instruction of the National Education Association. Pp. 15-16. (The report of this committee on Professional Education represents some advanced thinking about audio-visual personnel. Committee Chairman: L. C. Larson, Assistant Chairman: Louis Forsdale, Recorder: M. L. Miller.)

The following pattern of suggested requirements for the certification of audio-visual directors was developed:

(a) Baccalaureate degree from an accredited college or university.

(b) Elementary or secondary teacher's certificate.

(c) One year of graduate study with a master's degree from an accredited college or university, including:

1. Basic courses in education as required of supervisors, supervisory principals, and the like, in such areas as:
   school administration
   philosophy of education
   educational psychology
   elementary curriculum
   secondary curriculum

   Fraction of total point requirement

   1/3 to 1/2

2. Graduate courses in audio-visual education in at least three areas, as follows:
   Selection, circulation and utilization of audio-visual materials.
   Preparation and production of audio-visual materials (including graphics,

filmstrips, and radio pro-
grams).
Administration of audio-
visual materials programs.　1/3 to 1/2
3. Electives　1/3 to 0

(d) Three years of successful experience as prin-
cipal, supervisor, or teacher within last ten
years.

RECOMMENDATIONS FOR ACTION

The Group on Professional Education recommends:

1. That DAVI go on record urging appropriate
state groups to take steps in their individual
states to bring about suitable action to estab-
lish certification requirements for audio-visual
directors.
2. That DAVI assist appropriate state groups by
supplying them with a suggested pattern of
requirements for certification of audio-visual
directors.
3. That DAVI recommend that such state certifi-
cation requirements become effective within 3
to 5 years.
4. That DAVI recommend that experience as an
audio-visual director prior to the effective date
of certification be counted toward professional
course requirements in audio-visual education.

O O O

Editorial note: The two organization charts which
are reproduced here show how audio-visual person-
nel fit into the total administrative scheme in two
Michigan cities. The editors
present these charts merely
as types; they are not neces-
sarily organizations which
would be recommended. The
cities shown here are of mod-
erate size; larger cities might
need more complex organiza-
tions, while smaller cities
could provide effective ser-
vice with simpler arrangements. It must be kept in
mind that a systemmatic organization is imperative if
service is to be rendered effectively and regularly to
the teachers of the district. It is evident that if audio-
visual directors and other workers are to place high
in staff organizations they must have qualifications
comparable to those of other high-level professional
employees.

Obviously, the attention of the individuals in the
organization should be centered not on status in an
organization but on the basic responsibility each has
to the pupils in the schools. Organization is not an
end in itself, but is essential to the efficient flow of
materials into the classroom.

Audio-Visual Programs In Action

By
FORD L. LEMLER
(Editor)

Ann Arbor: Michigan Au-
dio - Visual Association,
1951. Pp. 17, 25.
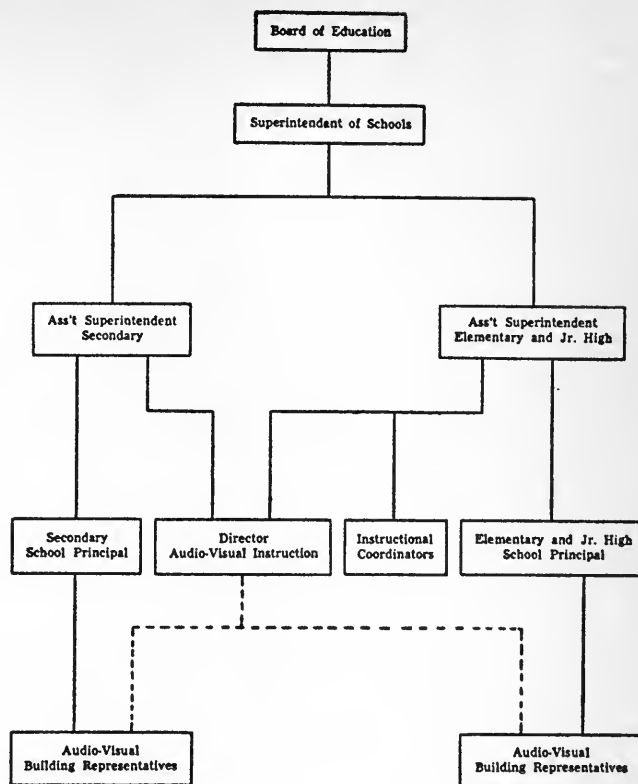
CHART 1.
Organization for the Audio-Visual Program in Dear-
born, Michigan. Chart furnished by William G. Hart,
Department of Audio-Visual Instruction. P. 25. Publica-
tion noted above.
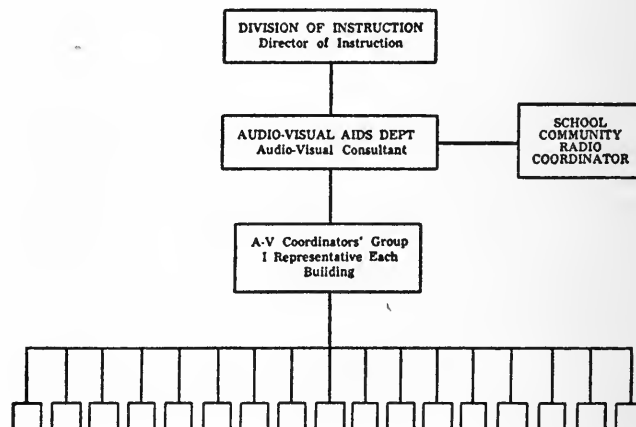
CHART 2.
Organization of the Audio-Visual Department in
Battle Creek, Michigan. Chart furnished by Marie
McMahon, Consultant in Audio-Visual Aids. P. 17. Pub-
lication noted above.

I. PRODUCTION

When to Produce and When to Buy

In courses in production, or in methods courses where production techniques are taught, one of the points that should be called to the attention of students is the question of when to produce certain materials and when to buy these materials.

The Production of Audio-Visual Materials in Programs of Teacher Education

By
DON G. WILLIAMS
W. ROGER ZINN
and
LUELLA SNYDER

In, Audio-Visual Materials in Teacher Education. Twenty-Ninth Yearbook of the Association for Student Teaching. (Harold T. Batchelder, editor). Lock Haven, Pennsylvania: The Association. 1950. Pp. 66-70.

The following questions should be asked before production is started on any material:

1. Is the material necessary in the learning situation?

2. Is the material already available in a form that can be used or easily adapted?

3. Is the material to be produced such that students would gain from participating in its production?

4. Will the finished production assist in communicating desired concepts?

5. Will it shorten the learning time?

6. Will the cost in both time and energy be less than the cost of comparable purchased material?

Of course, there are always times when materials of local interest will have to be produced, since such materials are not available through commercial companies; and there are times when the production process will give a class an appreciation and understanding of a topic that will never be gained from a commercial production.

The question of production really hinges on three things — availability, cost, and the learning value of the material to be produced. Each teacher will have to consider and weigh these three points before he can decide whether he should produce or buy.

Permanent Production Versus Temporary Presentation

Need for Budgeting Instructional Time

One of the factors that influences good teaching is the wise budgeting of instructional time. This is a topic usually neglected in most teacher education institutions. With the increase in class size and the increase in the number of required subjects to be covered, it is becoming more necessary than ever that future teachers be taught to budget their instructional time and personal energy. They should know the ways in which they can save their time and the time of their pupils . . .

Media for Saving Time

In many instructional situations there are diagrams, charts, and formulas that are put on the chalkboard for every class section as needed and then erased to make room on the board for other material. Often the total time needed to put these diagrams on the board is as great as that required to make a simple permanent presentation to cover the same information.

There are many ways in which permanent presentations can be made. The first and simplest is the large teaching chart. It is made of poster board stiff enough to stand on an easel or lean against the chalkboard, supported by the chalk rail. Another is the roll-up chart which can be made on the backs of old roll maps, or ordinary white or cream-colored window shades. Both of these take poster paints very well and have the advantage of rolling up out of the way. Charts can also be made on stiff paper or even on wrapping paper. These can be assembled, fastened together, and used on an easel as turn-over charts. In this way, the charts or diagrams which are to be used in any given unit are within easy reach of the teacher when he needs them in a class for study or review.

Presentations of graphic material can be made through the use of photographic or handmade lantern slides. The photographic slide requires that the material be copied from a book or an original drawing. There is a great deal of teaching material available in a form that can be copied photographically.

The handmade lantern slide requires either the ability to draw a neat sketch on an area $3\frac{1}{4}''$ x $4''$, or to trace accurately from some other drawing. These slides can be used in a semi-darkened room. They enable the teacher to make his own illustrations of topics being studied and place them before the whole class at once.

The teacher will find that it takes no more time to prepare a permanent presentation than it takes to make repeated presentations of the same material on the chalkboard. Using permanent charts and diagrams will save a considerable amount of time, especially for teachers of mathematics, science, social studies, and industrial arts.

Time can also be saved in preparing biological specimens which are easily damaged by too much handling. If these specimens are embedded in clear plastic, they will be almost indestructable and can be used semester after semester without further preparation. Plastic can also be used to preserve indefinitely specimens which are available only at one

season. An example is the horse chestnut twig that buds only in the spring. If these twigs are carefully dried and embedded in plastic, they can be kept indefinitely . . .

Improvement of Quality Through Permanent Productions

One other point that should be taken into consideration in permanent versus temporary presentation is that a permanent presentation will usually be made with much more regard to detail than will a chalkboard drawing. This is especially true for the teacher who does not draw or letter well. In many cases, a pupil can make the permanent presentation much better than the teacher and may add many clarifying details. This should have some carry-over into the pupil's concept of how materials should be presented. It seems ridiculous for a teacher to ask a science class to do a semi-professional job in their notebook sketches when he is satisfied with his own sloppy drawings on the blackboard.

REASONS FOR PRODUCTION

Aids to Instruction

There are many reasons for producing material to be used in the classroom. The first, and most obvious reason is that the material produced is an aid to group instruction. However, there are other purposes not usually recognized by the beginning teacher. These include the possibility of bringing in material related or supplementary to the unit being taught, in order to allow for individual differences or to interest and activate a class. This is particularly true of exhibits, bulletin boards, dioramas, and similar types of visual materials.

Preservation of Documentary Materials

Another reason is to preserve documentary materials, such as previous class performances or supplementary material that cannot easily be obtained again. It has been found that showing photographs or slides of work done by previous groups is a stimulus to class projects, since it is a standard that was established by other groups of pupils.

Documentary material can also be preserved by recording on magnetic tape, wire, or disc. Either a teacher or a qualified pupil can record speeches and reports of great historic events. Many schools now assign their recording equipment to designated pupils for the purpose of recording radio programs with educational value. These recordings make it possible to bring out-of-school programs into the classroom when they are needed or to preserve these programs for future use.

Reproduction of Documents or Artifacts

Another major purpose is the economical reproduction of valuable documents or artifacts. Many valuable pictures and copies of such documents as the American Constitution are available in our current photographic magazines. These may not be large enough for effective group use. A photographic slide or microfilm copy makes a valuable addition to certain subject matter areas. The same is true of collections of cartoons or current newspaper pictures. These do not lend themselves to filing for they become brittle and yellow with age. However, a photographic copy is permanent and can be filed easily. These can be used in an opaque projector, or the copy can be made directly upon a lantern slide to be projected for a class. The use of microfilm to make copies of expensive books or documents is well-known and need not be gone into here. However, many teachers do not know that microfilming can be done with any good 35mm. camera and a copy stand. Microfilm can be presented in the form of 2″ x 2″ slides, or as a film strip.

Artifacts, such as Indian relics, pioneer relics, and fossils, can be cast in plaster. This makes possible the accumulation of a large quantity of material. Many objects can be borrowed from parents or from local museums which might lend them for casting, but not for repeated class use.

Sound Recordings of Performance for Self-Analysis

Another purpose of production is to make sound recordings of performances for pupil and teacher self-analysis. These recordings are useful in speech, music, and foreign languages; and they are particularly helpful in analyzing teaching situations. For example, the magnetic tape recordings of class performance with a student teacher or supervising teacher can be reviewed later and evaluated. Magnetic tape recordings of pupil performance provide for a type of self-analysis that is almost impossible to get in any other way. Tape recordings are becoming so inexpensive and so easy to operate that they are a "must" in any production set-up.

VALUES OF PRODUCTION

Production activities enable student teachers to acquire certain production skills and techniques that will be of value later when they go out to teach. Production also motivates pupils to do a great deal more research in order to make an accurate production than they would for a traditional class assignment. This is particularly true if the production catches the interest and enthusiasm of the group. The group usually finds that it requires more accurate research to produce a replica of an early pioneer settlement, for example, than it does to describe it in words.

Student production, particularly photographic and motion pictures, develops an appreciation of the limitations and possibilities of the medium and a greater

appreciation of the difficulties that commercial producers encounter. This is helpful to future teachers, for some of the criticism of commercial production stems from ignorance of the problems rather than from knowledge of the subject being taught.

A value of production that is of particular importance to the administrator — although it should be of concern to every teacher in the schools — is that school-produced materials often will further and better public relations. Schools find it hard to interest parents and the tax-paying public in the day-by-day doings of the schools unless these happenings are presented in visual forms. Almost any of the materials which are made, if arranged in an effective display, will attract the public. These displays can be arranged from time to time in store windows, or they can be accumulated and used at a parents' night or for the education week that is becoming an established affair in many public schools.

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J. PROJECTION PROBLEMS

Most modern high schools with an audio-visual program depend upon students organized into a projection club, movie club, or visual aid corps to take cure of the mechanical part of operating equipment in the classrooms. East High School in Denver has been no exception. We, too, have depended upon

Three-Way Projection Service

By SAM S. BLANC
Educational Screen. Vol. 28, No. 3. March, 1949. Pp. 114-15.

our central pool of student operators, b u t it hasn't worked out to the entire satisfaction of teachers or to the coordinator in charge of the program.

We have problems. Sometimes the wrong materials or equipment arrived at a classroom, much to the annoyance of teacher and class. Sometimes the assigned operators were reluctant to change their routine to fit the teacher's needs. Friends of the operator were often present in a class, and because the operator was often a total stranger to the teacher, the by-play between operator and friends was difficult to control. Students could not always be relied upon to meet their schedules. And these were but a few of the problems that probably are familiar to many coordinators of audio-visual programs.

Complaints dealing with these problems were continually coming to the attention of the a-v coordinator and the principal. Time and effort, which might have been better spent, were used in smoothing out these complaints. In a school as large as East High and with such a varied program, as many as six or seven a-v activities might be going on simultaneously. The coordinator could not possibly be in all

places at once, and student operators apparently had more responsibility than they could carry.

With these problems to be solved, the whole student operator set-up was discussed with J. Osborne Johnson, Director of Special Services in the Denver Public Schools, and a new plan was evolved for East High School which provides for much more flexibility and a smoother operating program. The classroom teacher now takes greater responsibility, and he has a choice of three types of service for the projection of audio-visual materials in the classroom:

1. He may learn to operate the equipment and be responsible for the projection himself. Equipment and materials are brought to his room as before, but the operators do not remain.
2. He may delegate two students from his class for special training so that they will be prepared to take over the operation of projection equipment when it is used.
3. He may, if he chooses, rely upon student operators from the central pool, as previously.

In other words, this new plan places primary responsibility upon the classroom teacher for the operation of audio-visual equipment in his classroom even though he may want to delegate this responsibility to students in his own class. If he does this, the teacher has student operators in each class who are directly responsible to him. There is no divided authority.

The central control of the audio-visual program, however, is still in the hands of the audio-visual coordinator. His responsibilities include working with teachers to plan their use of audio-visual materials; booking, receiving, distributing, and returning all a-v materials used in the building; selecting the use of projectors and other equipment; maintaining equipment in good operating condition; training teachers and students to operate all kinds of equipment, and supervising a group of students to help with the overall program.

Each morning a "Duty Sheet" is made up for the student assistants. Each use of audio-visual materials is detailed and students are assigned. Materials and equipment are assembled for each assignment. Special instructions are given to the student assistants about delivering and picking up equipment and materials.

At the beginning of the semester when the new plan was introduced, a number of teachers who planned to make regular use of audio-visual materials asked for and were given instructions by the coordinator in the operation of equipment. Others designated two students from each of their classes to receive operators' instruction. A student trained in this way was issued a card which clearly indicated

the type of equipment he was competent to handle, and he is permitted to operate only that equipment.

Since this new plan has been in operation, a number of values have been discovered. First has been the lessening of difficulties in the mechanics of the program. This was expected, but a striking result has been the change in class attitudes. Now the use of the motion picture is being accepted as a normal part of class procedure rather than as a "movie" and a pleasant diversion. The students, in planning with the teacher, are constantly on the watch for materials that can be used in class. The fact that the teacher with his students accepts the complete responsibility for the use of audio-visual materials in a class encourages the development of group techniques of study in that class.

Not all teachers have taken advantage of the newer projection service alternatives. Some have been satisfied to have operators from the central pool take care of all their projection. The audio-visual department attempts to be of maximum service to every teacher and follows through with any one of the three methods chosen. It is hoped, however, that there will be less and less dependence upon the central pool for operators. By making our procedures more flexible and by placing more responsibility upon classroom teachers, we feel sure that we have definitely improved our audio-visual service and that our program will operate more efficiently than ever before.

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Projection Makes the Difference

A large percentage of the classroom projections, although involving no actual film damage, are poor demonstrations of projection technique. Students become adjusted to clumsy performance and perhaps the distractions are not so harmful as they would seem. There is, however, little excuse for bungling a projection. Poor projection results from ineptitude of the operator or faulty machine maintenance. The foregoing pages have discussed both factors thoroughly. Frequently educational film showings are marred by such faults as these:

Physical Equipment for Projection

By JAMES S. KINDER
In, Audio-Visual Materials and Techniques. New York: American Book Company. 1950. Pp. 296, 299-301. Reprinted by permission of the publisher.

1. The machine and screen have not been assembled in advance and the entire class must sit idly by while machine, screen, and room are put in readiness.
2. The machine is started and then must be stopped immediately and the threading adjusted because a check was not made of the threading prior to starting the machine.
3. The machine is started and a dozen or more feet of film leader with a succession of numerals flash on and off the screen.
4. The projector's beam is not centered on the screen.
5. Proper focus and framing take place a minute or so after the title appears.
6. The sound comes on with an ear-splitting boom.
7. The film may even be backwards.
8. Proper tone control is not achieved until the film is half projected.
9. Constant attention must be given to such matters as focus during the entire time of projection because focus may change. Volume may also change and need adjustment.
10. At the end of the showing the film is "run out white" on the screen for several seconds.

Care of Films

Dirty, scratched, and torn films give unsatisfactory screen images and are not conducive to the best learning attitudes. Whether a school owns its own classroom films or obtains them from a rental library, they should be clean, pliable, and free from tears and breaks.

Good film care and good projection are complementary. Competent operators using machines in good working order never damage film. In fact it is possible to run a film through a projector five hundred or more times without wearing it out and ruining it, if operator and machine are efficient. Careless and poorly trained operators, and dirty, ill-functioning machines destroy films.

Every time a film is projected, it should be inspected to see that it has not been scratched, sprocket holes torn, nicked, nor splices loosened. Repairs should be made, if needed. This is done by cutting out damaged frames and splicing the ends of the film together. There is practically nothing which can be done about scratches. They cannot be cut out, nor can they be filled in. The only remedy is the positive one of simply preventing them, which is easy enough. Projectors should be kept free of dust, and all parts which the film touches should be carefully cleaned with a soft cloth or chamois moistened with a solvent such as carbon tetrachloride. An orange stick or bone scraper should be used around the film gate; never any kind of metal. Excess oil should always be wiped away. After threading, a check should be made of loops and sprocket locks. Sticking rollers will also cause scratching. The efficient operator watches all these things as a matter of routine, furthermore, he checks the films for sprocket enlargements from time to time during the

projection by letting the film pass between his thumb and forefinger before it goes onto the take-up reel.

Film should not be allowed to become dry and brittle. It should be stored in a room or cabinet with a temperature not higher than 65° Fahrenheit and a humidity of 50 per cent. Ordinary use of the film tends to keep it in good physical condition. The winding and unwinding during projection exposes it to the air and tends to keep it alive. Films, like rubber bands, deteriorate more from disuse than from use.

Films should be cleaned periodically if regularly used. This will remove finger marks, oiliness, loosened emulsion, and dirt. Carbon tetrachloride is a satisfactory cleansing agent. Great care must be used in cleaning Kodachrome film because alcohol in the cleaning agent will dissolve some of the chemicals in the colors.

Finally, films should never be stacked on top of radiators nor near heating pipes or vents.

The following "Film Prayer" might well be memorized by every operator. This prayer summarizes good film care so succinctly that it is reproduced here in full.

THE FILM PRAYER[1]

I am film, not steel O user, have mercy. I front dangers whenever I travel the whirring wheels of mechanism. Over the sprocket wheels, held tight by the idlers, I am forced by the motor's might. If a careless hand misthreads me, I have no alternative but to go to my death. If the pull on the take-up reel is too violent, I am torn to shreds. If dirt collects in the aperture, my film of beauty is streaked and marred, and I must face my beholders— a thing ashamed and bespoiled. Please, if I break, never fasten me with pins which lacerate the fingers of my inspectors. Don't rewind me—my owner wants that privilege, so that he may examine me, heal my wounds, and send me rejuvenated upon a fresh mission.

I travel many miles in tin cans. I am tossed on heavy trucks, sideways and upside down. Please see that my first few coils do not slip loose in my shipping case and become bruised and wounded beyond the power to heal. Put me in my own can. Scrape off all old labels on my shipping case so that I will not go astray.

Speed me on my way. Others are waiting to see me. The next day is the last day I should be held. Have a heart for the other fellow who is waiting, and for my owner who will get the blame.

I am a delicate ribbon film—misuse me and I disappoint thousands; cherish me and I delight and instruct the world.   —A. P. Hollis

Editorial note: Hollis wrote *The Film Prayer* in the days when the life of the 35mm film was about 85 showings. Today, a 16mm film, in school use, may be expected to last through several hundred projections over a period of years. Yet, in the hands of an inexperienced or careless projectionist a new print can be easily damaged.   ✪ ✪ ✪

K. PUBLIC RELATIONS

Audio-visual materials played a large part in the campaign for better public school buildings for Grand Rapids. The 2 to 1 approval by the voters on February 19 of a two-mill levy to raise $11,000,000 in the next 20 years was the expression of an electorate well informed on the needs of its schools.

A-V Materials Helped Us Win Our Campaign for New Schools

By W. R. ZINN
The Nation's Schools. Vol. 48, No. 1. July, 1951. Pp. 66, 68, 70.

The campaign to communicate to the citizens the needs of their schools was child centered and citizen directed. How to bring the findings of a citizens committee to all the citizens of the city was the problem.

The complete story of communication would include such written and spoken approaches as newspaper articles, forums, talks by individuals, letters and the conversation in house-to-house calls. Here attention is directed only to projected pictures, posters, banners, cartoons, radio and television. The audio-visual materials developed were borrowed from other cities and adapted to the local situation. The unusual response of the public to one of these media in particular points to its probable value in other campaigns for better schools.

The most effective instrument for presenting the needs of our schools was the 20 minute sound motion picture, "Your Schools." It consisted of 120 still pictures with added sound track. This type of film is referred to as a "motion-still" or a "film-o-graph." From a projection standpoint the film-o-graph had many advantages. About half of the photographs needed were already in the school files, ready to be put to this use. The remaining pictures selected as essential by the citizens committee were taken in two days by a commercial photographer assisted by a student employed part time in the audio-visual department. These pictures, together with the comment carried by the sound tract, reported the conditions the committee members had actually seen in their visits to the schools the preceding summer. So, in a very real sense, the findings of the citizens committee dictated the script.

Two weeks after the decision was made to produce the film-o-graph it was ready for use.

The film-o-graph told a straightforward story about the public school buildings of the city. It opened with an aerial view of Grand Rapids and appealed to the pride of the citizen in his city. There followed a general survey of the school buildings beginning with the oldest, "the granddaddy of them all," and ending with the newest, constructed in 1929.

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1. Courtesy of De Vry Corporation, Chicago, Illinois.

The dates of additions were given as each building was shown.

Presented next were views of the interiors of buildings that needed replacement, with attention to faulty construction, narrow corridors, fire hazards, and other features that would make replacement more economical than renovation. As in most cities of this size, many old buildings are sound and fairly adequate. These were shown and with them views of interiors of buildings that had already been modernized. This introduced a cheerful note in what was otherwise a rather drab picture, for the redecorated rooms and furnishings gave a view of what might be accomplished in all the good older structures in the system.

The need for new construction was pointed up by scenes of new residential areas being built up and requiring new schools. The problem, as presented, was stated as: "Simple as A B C's: Areas growing in size, Buildings growing in age, and Children growing in numbers." The presentation closed with a view of two small children, hand in hand, moving forward from their school and the statement that the provision of adequate facilities for the children of the community rests with the citizens of Grand Rapids.

Except for the appeal to the citizen's pride in his city and his concern for its children, there was virtually no appeal in the film for a favorable vote on the proposal to increase millage. The film was designed to "show" the citizen what he himself would see if he would retrace the steps of the citizens committee members as they inspected the buildings the preceding summer. Oftentimes, a committee member would say in presenting the film as a part of a talk to an organization, "I can assure you that that attic is just as you have seen it, for I climbed over the same old timbers last summer."

The value of a factual, photographic presentation was demonstrated in the use of the film by civic leaders. The film told the story of the condition of school buildings convincingly. Citizens could "see for themselves." When school needs were being presented to community groups, the film carried the load of showing the conditions and the speaker was relieved of this task, a task that would be all but impossible if handled by verbal communication alone.

After the showing, the audience, supplied with a common audio-visual experience, was ready to understand the speaker's interpretation of the needs and to enter into fruitful discussion to clear up misunderstandings. Thus the basic data were presented in the most effective way—the audio-visual way—and the speaker was freed to devote his time to work on the higher level of interpretation.

Standard glass slides proved to be another helpful tool in communicating school needs to the citizens. A set of six was prepared in these topics: (1) areas in elementary school district not adequately served; (2) new elementary schools needed to serve the city adequately; (3) plan for replacement of obsolete schools; (4) areas in junior high school districts not adequately served; (5) new junior high schools needed to serve this city adequately, and (6) present location of senior high schools with proposed site change.

The slides presented, in terms of areas, the present facilities and the degree to which they were adequate; the areas poorly served at present, and the solution that would be effected if funds were provided. This medium was helpful in relating the total program to a section of the city. Further, each slide could be discussed until all questions were answered to the satisfaction of the audience.

SUITABLE MEDIUM

Standard glass slides were selected as the medium because they could be prepared quickly and easily by a photographer, they provided for flexibility in order of presentation, and they were particularly suitable for large audiences. For small groups, sets of charts identical to the slides were used.

A number of billboards and banners were used. In front of seven schools scheduled for replacement, banners were placed stating that a favorable vote would mean a new school for that district. In five areas scheduled for new schools similar signs were placed. Cards, 22 by 9¼ inches, were put on the inside of every bus in the city in space donated by the bus company. A large billboard on the junior college building urged citizens to "Vote Yes on Proposition No. 2." A large banner in the downtown area listed the 94 organizations that endorsed the "Support Our Schools" campaign.

Radio was used for spots and for 12 word time signals. Round tables and talks were presented by citizen groups supporting the campaign. As did other media the programs broadcast pointed up needs and showed how the proposed two-mill levy would meet those needs.

Three printed booklets were valuable aids in the campaign. The first was a workers' handbook, which reviewed the problem in outline form, presented the solution under consideration, and provided suggestions to guide the workers in their approach to their fellow citizens.

The second was a cartoon-style pamphlet, "You Can't Argue With the Stork." It presented pictorially the relation of birth rate to school needs and the necessity of preparing now for the increasing ranks of

the 5 year olds. This pamphlet was delivered by campaign workers to every home in Grand Rapids.

The third printed booklet, "February 19 Is a GREAT DAY" also in cartoon style, related schools to democracy and reviewed what adequate school plants would mean to the children of the city. Children took these home to their parents on the Thursday before the election. The cartoon treatment served to get attention and to present basic facts graphically for easy comprehension.

To reach a broad audience, movie trailers stating the problem and asking for favorable action at the polls were run in the neighborhood theaters.

Television provided one of its first great educational services in Grand Rapids when three showings were made of our film, "Your Schools." Many who had had little contact with the campaign and had not been present at any of the 150 showings of the film were able to see in their own homes the needs of the Grand Rapids schools.

In this campaign for better school facilities, as in all appeals to the citizenry, the need was for effective tools of communication. Even with the best of causes, lack of understanding will bring an adverse vote. With the proper use of audio-visual media, the facts can be presented quickly, clearly and convincingly.

ANOTHER VALUE

The extensive use of audio-visual materials in a campaign for better schools has marked value for the audio-visual instructional program. It reminds teachers and administrators of the effectiveness of the new, objective teaching materials. If these materials help adults understand the need for better school buildings, won't they also help boys and girls understand better the problems they are studying in school?

A second value to the audio-visual program is the stress it puts on present equipment and services. Does the school own enough of the right kind of projectors and projection stands to serve in all sorts of auditoriums in the community? Are teachers and student operators trained to use these materials in such a way that the attention of an audience is not diverted from the program to the operation of the projection equipment? These questions may require emergency answers if the department is not adequately prepared to meet special demands.

A final value to the audio-visual department is the opportunity afforded to extend its services to the community at large. The director and his associates meet and work with outstanding citizens. In setting up equipment in labor halls, club rooms, hotels, churches, factories, the chamber of commerce, and private homes, audio-visual personnel thus help present school needs to people of every occupation, race and creed. Of course, the extensive use of these newer media of communication is the assurance that the electorate that marches to the polls is well informed.

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Keeping the community informed of the aims, achievements, and happenings of their school is a problem every school administrator must meet. The job is so complex and community groups so diverse that every possible medium of communication should be used. Too often a school depends almost entirely on the newspaper to carry its story to the public.

Telling the School's Story with 2 x 2's and Tape

By
CHARLES E. BROWN
and
HAROLD HAINFELD

Educational Screen. Vol. 29. No. 3. March, 1950. P. 112.

We became convinced that other media should be used when we analyzed the school news published in two local newspapers. Here's what our public was reading about our school: Athletics — 87.3 per cent. Special Events — 7.3 per cent. Student Activities — 2.6 per cent. Recreation Program — 2.3 per cent. Honor Roll — .4 per cent. School Accidents and Vandalism — .1 per cent.

The newspaper reader could assume from what he read that seven-eighths of the program of his school is devoted to athletics. What a distorted picture!

"School Nights," when the school has open house, provide a good way of giving parents and others a more balanced picture of what goes on in the school. But school isn't in session on such occasions, and time is too short to take every parent to every room and tell him everything he should know.

This year we're going to tackle the problem in a different way when we have our annual P. T. A. Fathers' Night in April. We have been preparing for it for over a year. On that night we're going to make an audio-visual report to the community using 2 x 2 slides and a tape-recorded commentary.

All of the pictures have been made by eighth grade students during the past several months. Slides included show kindergarten activities; students' introduction to reading and number concepts; various units in geography, social studies, and science in the intermediate grades; safety activities and other phases of the school health program, including physical and dental examinations; recreational activities; the industrial arts program, home economics; art and music — in fact, every phase of our school program has been pictured as it has been carried on over the past year.

In developing the project, we learned it could be done inexpensively. The Roosevelt School P. T. A.

financd the cost of photographic supplies. We would have preferred Kodachrome pictures, but our $15 budget wouldn't permit colored slides. We used a Kodak Bantam and Super XX 828 film. From the negatives we made contact prints on 35mm positive film and mounted each transparency between glass. Using this method, the $15 budget was entirely adequate and even covered the cost of a metal box for slides.

The audio part of the presentation is to be recorded on tape with various members of the staff telling their parts of the program. The school nurse will tell about the health program, the industrial arts teachers will explain shop activities, etc. The one best qualified will explain each part of the school program.

We are confident that through this kind of audio-visual presentation, we'll be able to tell our school story much more completely and more interestingly than ever before.

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L. SELECTION AND EVALUATION OF MATERIALS

We had a stimulating discussion in seminar during the past summer session at U.C.L.A. on the subject of evaluation. The teachers and administrators in the group demonstrated by their questions that one of the foundation stones in a sound audio-visual program is an intelligent appraisal of the effectiveness of the teaching aids used in instruction.

Evaluating Teaching Aids

By
F. DEAN McCLUSKY
The Instructor, Vol. 43, No. 1. Nov., 1948. Pp. 31, 79.

Mr. G—— gave expression to the first phase of the discussion when he a s k e d, "What is the utility of evaluating films and other audio-visual aids apart from use?"

"Your question turns the spotlight on one of the fundamental problems in an appraisal of audio-visual materials," I replied, "because it focuses attention on the reasons for making evaluations of teaching aids. Mrs. A——, you have had practice in evaluating teaching aids; how would you answer Mr. G........'s question?"

"Our experience demonstrates that there are five arguments for evaluating audio-visual materials in advance of use," answered Mr. A——. "In the first place, we are able to screen out those aids which contain undesirable advertising and/or propaganda; secondly, we can eliminate those materials which are poor in technical quality; a third point is that we catch misrepresentation and errors in fact; fourth, we are able to determine whether the particular aid has application to the course of study (some materials measure up to all other requirements but not that

of correlation with our curricula); and finally, through such evaluations we determine which materials to recommend or purchase."

"I assume," went on Mr. G——, "that you worked with a committee. How can a committee judge the worth of films which cover content in areas other than those with which its members are thoroughly familiar? No one committee, not even the stand-by experts on 'Information Please,' could be expected to be informed in all areas of knowledge!"

"Our central committee," explained Mr. A——, "asks teaching specialists to pass on the authenticity of materials and their place in the courses of study. This procedure has an advantage in that many subject-matter experts are not familiar with photographic and other technical standards and need the help of our more experienced central group in evaluating the total effectiveness of the materials being judged."

"I accept the answers which Mr. A—— has given to my questions," said Mr. G——. "His experience clearly shows that there are sound administrative reasons for those evaluative procedures which he has outlined."

"Speaking as a classroom teacher," said Miss N——, "I feel that there is a point in Mr. G——'s first question which has not been covered in our discussion so far. It seems to me that the most important evaluation of teaching materials lies in their effectiveness for classroom use. For example, in our school system, audio-visual aids are selected by means of an evaluative procedure similar to the one described by Mr. A——, but some of the films chosen are not effective when shown to the pupils. I believe that classroom teachers should participate more extensively in the evaluative program. How could this be done?"

"One method of enlisting the judgment of teachers is to add larger numbers to the viewing panels. Another plan is to ask teachers to fill out a brief evaluation form after using a film," I replied. "These reports help other teachers determine how the film may best be used. And, if the film has been obtained by renting it from an exchange, the evaluations serve as a guide for further bookings. The sifting or selective type of evaluation is a must from the administrative point of view, but it takes an appraisal of the classroom effectiveness of teaching aids to make a real impact upon instruction."

"I grant that a committee which sifts out the more desirable materials is not infallible in its judgments," observed Mr. A——. "Likewise, we have noticed that teachers also are not perfect; they do not always make the best use of good teaching aids. Would not a program for the evaluation of classroom techniques help us in determining better all-around util-

ization? Some teachers report unfavorably on the value of certain aids, while others, after using the same aids in the same subjects, find them to be useful. Whose judgment is right?"

"Now we are down to cases," said Mr. G——. "What are the criteria for judging the value of teaching aids in classroom use?"

"There has never been a comprehensive list of criteria established to serve the purpose that you have in mind," I replied. "However, experience has taught us that the list would read somewhat like the following.

1. Were the materials that were used closely related to the lesson being taught?

2. Did the audio-visual aids help to broaden the experience of the pupils?

3. Did the teaching aids contribute to the development of pupil interests?

4. To what extent did the audio-visual aids meet pupil needs?

5. Did the teaching materials bring to the pupils experiences which would have otherwise been inaccessible?

6. Did the teacher use the audio-visual aids to clarify meanings?

7. Were pupils given a chance to express themselves in kind by utilizing audio-visual techniques?

8. To what extent did the use of audio-visual aids save time?

9. Did the teacher use the materials which were designed to achieve the objectives of the lesson?"

"What references would be helpful to us if we wished to do further reading about the evaluation of audio-visual programs?" inquired Miss N——, as the discussion came to a close.

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5400 films available for use in classrooms, libraries, clubs, etc.! No problem here of film selection, but wait — which film are you going to use? Do you do as many do — pick a film by subject, title, and description? If the film isn't what you want, do you try again the next time the same way? What about the films used previously — can you remember them all and what they are about?

Film Selection and Evaluation

By
CHARLES CROMBIE

Questions such as these have to be answered by any individual or group using films. It's difficult to select the proper film by catalog write-up. Sometimes such write-ups are good and sometimes they're bad. How can you profit from experience?

As an individual you can profit from experience by keeping a list of all films you have used or seen, with a comment about each film. The usefulness of such a list is increased if it is kept on file-cards and contains the following information: title, producer, source, length, content. The information might be arranged in a number of ways.

As coordinator of a group you can profit from experience by making but a few minor additions to the suggestions above. A standardized form of recording information is needed to prevent "ump-teen" types of record keeping. The evaluation blank shown here will take care of this problem.

In any group there are apt to be as many ideas on a subject as there are individuals. This may be all right in a discussion group, but is hardly conducive to systematic record keeping. Ask a group if a film is good or bad, and chances are you'll receive as many different answers as there are people in the group.

Order can be brought out of this chaos of evaluation if every person uses the same evaluative criteria. The criteria accompanying this article were developed to help in arriving at a group evaluation. The only thing necessary is to see that each person has a copy of the criteria and uses them in completing the form.

Will the ideas outlined above really work or are they just "ideas"? They've worked and are working now! These ideas have been used with success in both a one-building and a thirteen-building school system. Every teacher using a film filled out items 4-9 inclusive. These forms were filed under film titles and the second year were available when film orders were made out.

We didn't have to wait a year, though, to get some use from our completed forms. If a teacher was interested in a film he was free to examine the completed forms. This helped him to get some idea of the usefulness of the film for his purpose.

This system can't, won't, and is not, intended to replace teacher preview. Previewing is still the best method of selecting films. Teachers in most cases are willing, but aren't always able, to preview every film before showing. This method of film evaluation will prevent many errors in film selection by giving teachers some idea of film content and quality, if they can't *possibly* preview.

The plan increases in value with use. Each succeeding year adds to the list of films seen and evaluated. Guess work is removed when considering such films.

It requires very little time to complete a blank. Teachers are willing to take the time to fill out the blank because they can see its value. The amount of space needed for filing the cards is small. If the form is printed on a 3 x 5 or a 4 x 6 card, a standard

file box can be used. This system of film selection and evaluation is simple, inexpensive, and practical.
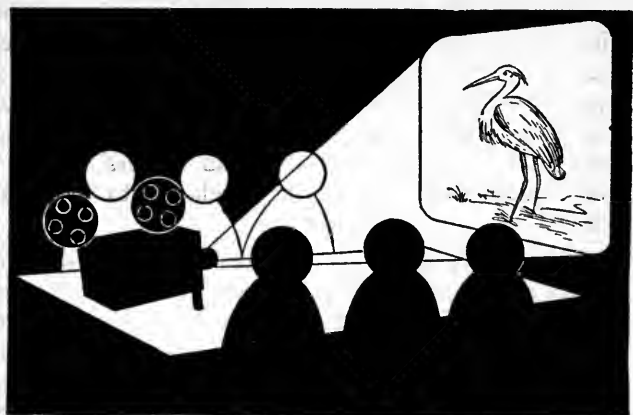
CRITERIA FOR FILM EVALUATION

Below are some suggestions of things to look for in viewing a film. They can well suggest points on which to make comments to be entered on the evaluation blank. Items I, II, IV, VII, and X are the most important.

I. *Utilization*—Where does this film fit into the curriculum? In what grade or grades? For what subjects? What unit or units?

II. *Correlation with Curriculum*—How well does this film fit into the curriculum?

III. *Objective*—Is the teaching objective of this film sufficiently specific and clean-cut so that it can be clearly stated in words?

IV. *Function*—What main functions or purposes does the film serve?
  A. To teach a specific part or phase of the subject?
  B. To stimulate or increase interest in the subject?
  C. To provide background for understanding the subject?
  D. To teach or develop a specific vocational skill?
  E. To develop social attitudes and understandings?

Note: When is the best time for the teacher to use this film?
  A. At the beginning of unit or units specified for Utilization (I)?
  B. During study of unit or units?
  C. As summary of unit or units?

V. *Scope of Content*—Which one of the following statements expresses most closely your opinion of the scope of the content of this film?
  A. It covers just the right amount of ground.
  B. It covers too much ground.
  C. It covers too little ground.

VI. *Selection of Detail*—Does this film cover the right details of its subject matter?

VII. *Pace*—Which of the following expresses your opinion of the pace and speed at which the content of the film is presented?
  A. Pace and speed of treatment are just about right, for comprehension by students of the maturity level indicated for Utilization (I).
  B. Pace and speed too rapid for adequate comprehension.
  C. Pace and speed too slow.

VIII. *Accuracy and Authenticity*—How do you rate this film?

IX. *Correlation of Visual and Auditory Elements*—Are the words heard related closely and effectively to what is being seen on the screen?

X. *Appropriateness for Grade Level*—How do you rate this film on its suitability for students of the maturity level indicated for Utilization (I)? As to vocabulary? As to simplicity or complexity of treatment?

XI. *Pedagogical Soundness*—How do you rate this film on conformance to basic principles of effective teaching?

XII. *Interest*—How do you rate this film on its ability to interest students at the grade level indicated for Utilization (I)?

XIII. *Exploitation of Medium*—To be worth using, a motion picture should do something that cannot be done, or cannot be done so well, by other and less expensive media. For example: does the use of a sound film justify itself or could the same ground be covered with equal effectiveness by printed pictures, by a printed text, by a silent motion picture, or by still pictures in a filmstrip? How do you rate this film in this respect?

EVALUATION BLANK

1. Film........................ Instructor...................... Date............

2. Producer... Length....................

3. Source............ Silent........ Snd........ Color........ B&W......

4. Used in grade...................... Subject.............................

5. With unit on...

6. For use with this unit the film is:

     Excellent........ Good........ Average........ Fair........

7. Student interest and reaction to the film:

     Excellent........ Good........ Average........ Fair........

8. Comments: ....

   ....

   ....

   ....

9. I recommend this film for use in grade.... Subject......

M. STARTING A PROGRAM

To inaugurate, according to Webster, means *a ceremonious beginning.* Many audio-visual programs have had ceremonious beginnings, but on account of improper planning, short-sightedness, and lack of knowledge by teachers as to how to integrate these aids into the curriculum, many have had unceremonious endings or have slowly disintegrated.

Inaugurating an Audio-Visual Program

By LEE W. COCHRAN
Audio-Visual Guide. Vol. 14. No. 2. October, 1947. Pp. 32-35.

For a number of years educators have been trying to analyze just why there has been so little planning for the better use of audio-visual aids in the classroom, but to my knowledge they have never reached any definite conclusions as to just who is at fault. The *teacher* points to the administrator and says: "Administration won't budget the money for an adequate program." The *administrators* say: "When we budget money for these expensive aids and equipment, the teachers don't know how to use them adequately. The program is often just another picture-show in our classrooms." The *supervisors* stand about half-way between, some favoring the side of the administration, and some leaning toward the teacher's viewpoint in this discussion.

I do not mean to imply that there are no well-planned audio-visual programs in our schools today. Some schools have outstanding programs, well planned, and contributing in a major way to educational objectives in the classroom. But in approximately 90% of our schools the audio-visual program is something that *just happens.* A few teachers or administrators try to get other teachers to use these materials in their rightful place in the curriculum. The remainder of the teaching staff are not willing to devote time or energy to the problem.

Perhaps the so-called audio-visual specialists have been at fault. They hold conferences where they talk only to themselves instead of talking to teachers and administrators about this problem. Only in the past five or six years has any energy been exerted by the so-called specialists to try to reach the source of the problem, *and that is the on-the-job administrator and teacher.*

Since 1940 many states have changed their attack on this problem. They have gone to communities and there have conducted institutes for the in-service teacher on how to evaluate learning aids and utilize them. Such meetings are bearing fruit. Teachers become aware of audio-visual aids as curricular materials. They no longer just show pictures in their classrooms to take up another hour of teaching time.

Administrators are becoming aware of the continuing need for in-service teacher-training. They are conducting demonstrations and forming committees to investigate trends in utilization. What about the college teacher training program? Those new teachers coming into the profession at the end of each semester—can they evaluate and select the teaching aids? Have they received instruction in these materials that will give them an understanding of the possibilities of each aid in relation to their subjects?

The colleges are to blame for teacher-training deficiency in the use of audio-visual aids. A few courses in audio-visual methods have been offered in some of the larger colleges, often only during summer sessions. The courses have been in many cases built around the needs of the audio-visual specialists, the work of a director or supervisor of an audio-visual department, and not for the classroom teacher.

In our state, school administrators are becoming disturbed by the fact that newly graduated teachers *are not aware of audio-visual aids and cannot use them in their teaching.* How can we remedy this situation?

At our school we are trying to insert an audio-visual unit into all methods courses so that it will reach all prospective teachers in the subject in which they are majoring. This unit of study gives the minimum essentials that every teacher should know. This unit in the methods courses will in no way interfere with the regular audio-visual courses. We have found, in fact, that when students are introduced to audio-visual education in the methods courses, it has increased the registration in the regular audio-visual courses approximately 75%. Every teacher-training institution should have an audio-visual laboratory, where prospective teachers may become acquainted with all types of learning aids and conduct research projects in new methods.

After teacher training, probably the next important phase in a successful audio-visual program is that of establishing an adequate budget. Many cities have beautiful school buildings, yet a pitiful, inadequate supply of learning aids. Many schools do not provide even a minimum of such aids for efficient learning. It is just as foolish to build a beautiful building and not provide for instructional aids, as to build a factory and not plan for the necessary machinery. In a new factory the tools of production are an integral part of the plant, not an afterthought. Why can't we as educators plan our buildings to include the tools necessary for good learning?

Just what is an adequate budget for the entire needs of a specific school system? Figures vary a

great deal, depending on the size of the school system, the number of pupils, the distances between schools, and other factors. Some states have gone on the assumption that $1 per pupil per year is adequate, but they may be considering only the projected aids, such as motion pictures, lantern slides, and filmstrips in this total. Others say they are spending $2.00 per pupil. Still others say they are spending $5 per pupil. Even that is not adequate when all audio-visual aids, such as maps, charts, globes, models, projected aids, and equipment are considered.

As an example, let's take a small city with two high schools with an attendance of fifteen hundred, two junior high schools with an attendance of two thousand, and ten elementary schools with an attendance of seven thousand, a total of ten thousand five hundred students in the system. A budget of $2 per pupil per year for audio-visual aids—$21,000 in all —an average of fifteen hundred dollars per school— would it be adequate? It would be larger than many school systems have at present, but in view of classroom needs, would it meet requirements? Would it provide the teachers with all of the tools necessary to educate students to cope with the problems of this age?

In the past school administrators have tried to get money for audio-visual materials in every conceivable manner except asking for it in the regular budget. We find enterprising teachers taking up collections from students to pay for film rentals and other aids. I hardly think those teachers would ask students to pay for typewriters used in typing classes, or microscopes used in science classes, or shop tools used in shop classes.

The second important phase of an audio-visual budget is that it be based on a long-range plan, providing for the addition of new materials each year, so that it will not demand a large financial outlay in any one year. School administrators are often confused and alarmed when they study the needs for audio-visual aids in their schools, and do not include these needs in the budget, fearing that their boards will never allow large sums of money for maps, charts, globes, pictures, films, projectors, records, playbacks, etc., and yet if by a long-range plan these items were to be added over a period of years, a large collection would soon be available.

We have been playing with pennies in our audio-visual budgets. We need to grow up and go to work with dollars that will help our teachers provide more meaningful learning.

Up to this point we have discussed the teacher-training problem and the budget. Now, I want to discuss with you the organization of an audio-visual department for your school. To be successful any program must have *some one person in charge*. It may be a school system with only twenty teachers, or one with five thousand teachers, *but it must have the responsibility placed with one person to direct its success*. This of course brings up the problem of securing a competent director, one with broad knowledge of learning aids, with mechanical ability, and with an understanding of the school curriculum from kindergarten through twelfth grade. The audio-visual director cannot be just a teacher who likes to play with projectors. He must be an educator with broad experience and with an understanding of the limitations of visual concepts in specific teaching situations.

The director may be a teacher *with part time allowed for this purpose* in the smaller schools, *or a full-time director with assistants in the larger school systems*. In some of the smaller schools it is difficult for the part-time teacher to arrange the program, plan for new materials, and supervise the utilization of the aids in the classroom. However, I do know of a school in our section of the country that has *only twelve teachers and that provides half the time of one teacher for the audio-visual program*. I know of another school with only sixteen teachers that gives *more than half the time* of one of the teachers to the audio-visual program. Yes, and I know of schools *with over four hundred teachers that have no person to supervise this work*. The small-school administrator is often so much closer to the teaching problem that he can see the need for competent use of learning aids. He obtains assistance in his program.

What might be considered the duties of an audio-visual director in the average school system? He should:

1. Plan for the equipment needs of the school and future needs as indicated by the expansion of the program.

2. Maintain adequate spare parts for all equipment, and arrange for some reliable person to make necessary equipment repairs.

3. Be responsible for procurement of films, filmstrips, slides, flat pictures, recordings, charts, models, maps, and other aids.

4. Be responsible for organization of this material into a teaching materials library, with adequate cataloging and indexing.

5. Arrange for the training of teachers and students in the care and operation of equipment.

6. Plan an in-service training program in the utilization of aids.

7. Keep teachers informed regarding new aids that become available, and assist in the selection of aids to meet curricular needs.

8. Plan a teacher evaluation program of materials to be used and a student evaluation program of materials that have been used.

9. Be responsible to the school administration for budget plans, and for a specific long-range program of expansion.

10. Be responsible to the administration for the planning of audio-visual units in new schools and in the remodeling of old buildings.

I do not mean to imply that an audio-visual director will be the answer to all of your prayers, *but I do know that such a director will give added emphasis to your learning aids program in any school. To be effective though,* this director must be given enough authority *to carry out the policies established by the administration.* He must have authority *to carry out the in-service teacher-training program. He must have authority and professional respect from the administrative department* if he is to be successful in the improvement of utilization in the classroom. Such a director should not have the authority to force the use of aids on teachers that do not wish to use them. If he is worthy of his position, he will make the program so interesting that teachers will want to use new materials.

The audio-visual director *cannot do this job alone.* He must have assistance from teacher committees in the selection of aids for specialized subject-matter fields. He will need assistance from supervisors and teachers in giving demonstrations in good utilization practices. He must have clerical help and adequate space to house, store, repair, and distribute the aids, if they are to reach the schools and teachers at the times needed.

Let's go a little further and *consider what might be the minimum equipment for an individual school of 300 to 400 enrollment.* These needs would be for *projectors, playbacks, and recording equipment:* I would recommend this as minimum:

1. One $8\frac{1}{2}$ x 11 opaque projector.
2. Two combination filmstrip and 2 x 2 projectors.
3. One 16mm sound motion-picture projector.
4. One microscope projector (for science).
5. Three portable wall-type screens.
6. One portable radio.
7. One combination 78 and $33\frac{1}{3}$ R.P.M. playback.
8. One (disc or wire or tape) recorder.

In a few years we will consider the equipment that I have just mentioned as insignificant. Teachers will demand equipment on every floor of the building, and in many rooms on each floor. To be effective, equipment must be readily available to the teacher, and not kept locked in the principal's office.

What might be included in an audio-visual center for a school system? Such a center will need adequate space in which to operate, and we might consider the following more or less as a minimum:

1. Director's office.
2. Booking and business office.
3. Preview room.
4. Space for playback equipment with earphones.
5. Space for storage of films, film strips, slides, recordings, charts, maps, special types of exhibits, and repair space for equipment and materials.
6. Shipping and receiving space for unpacking and packing of materials.

This should be a teaching-materials center, where teachers can come for information regarding new aids and where all materials are indexed so that teachers can find what is available. In smaller school systems this center might be run by the librarian.

The problem of classroom needs for projected pictures was impressed on me recently when I was invited to give a teaching demonstration in one of the schools in our state. We set up our projector in a classroom *where teachers had been using projected aids for several years,* and found that to get an electrical connection we had to *run a drop-cord approximately 100 feet down the hall, over a transom, and into a small closet adjacent to the principal's office.* To darken the room we had to climb up on the window sills of eight different windows in order to reach the meager shades that only half darkened the windows, before we could even start the demonstration. This all took place in quite a modern school building.

Can we expect our teachers to go through this kind of acrobatics every time they want to project some visual aid in the classroom?

Not one building in fifty has been planned for audio-visual instruction.

The minimum of classroom needs for the projection of visual materials might be:

1. Shades for darkening the room—opaque and easy to operate.
2. Electrical outlets at the front and back of the room. The safety factor alone is enough to demand **this.**
3. Acoustical treatment of rooms where sound is involved.
4. Adequate ventilation in rooms when they are darkened.

Permanent sound connections should be wired into all new buildings where sound motion pictures are to be used, with jacks for connecting speaker and projector.

We have heard considerable oratory regarding the great success of the armed forces audio-visual program, and the success of the same program in industry during World War II. I would like to give you a few examples of contributing factors in the service programs that made audio-visual aids success-

ful and compare them with possible use in present-day education:

1. The men responsible for the training of the army, navy, marine corps, and coast guard were willing to experiment with the audio-visual method of instruction in comparison with the old method of using field manuals and verbal instruction.

Educators in many cases have been unwilling to give audio-visual materials an unbiased test in their schools.

2. The success of audio-visual materials in service training was due primarily to the sound planning of the program.

In comparison, educators have always been willing to take whatever aids commercial producers offer them, without raising their voices relative to what the actual classroom needs might be.

3. Utilization specialists and coordinators had the specific job of working with instructors on methods of improving the instructional program through the proper use of audio and visual aids. In many cases it was not the procurement of some expensive aid that gave the best instruction, but some simple device planned by the instructor and produced with the assistance of an artist or technician.

In comparison, we often fail to put *some one person in charge of his program*, to give the necessary guidance and to coordinate the aids with the units of instruction.

To summarize what I consider necessary to improve the program in most schools:

1. An in-service training program to include selection, evaluation, and utilization of learning aids.

2. A better understanding of the needs by administrators, so that adequate budgets will be provided.

3. Improvement of physical conditions in classrooms for showing projected aids.

4. Provision for a director of the audio-visual program.

5. An audio-visual or teaching materials bureau, including adequate quarters in which to operate it.

6. A research program in each school system, to study the needs for aids and to cooperate with producers.

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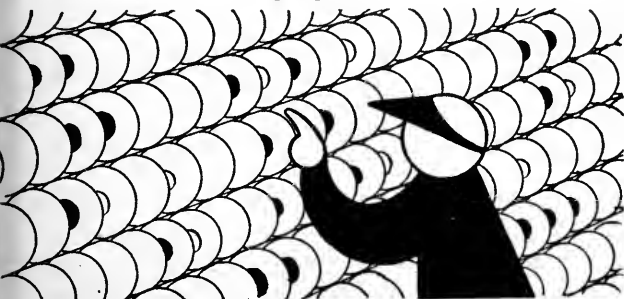
N. STORAGE AND MAINTENANCE

A. Physical housing and upkeep are important.

1. Inasmuch as many audio-visual materials are constructed of relatively delicate materials, adequate housing for these materials is economical in the long run. The storage of materials and film should be in an accessible location.

Care of Audio-Visual Materials

By
F. DEAN McCLUSKY
In, Audio-Visual Teaching Techniques. Dubuque, Ia.: William C. Brown Co. 1949. Pp. 100-102.

2. Motion picture film may be stored in a vault or on open shelves. This applies to 16mm safety film.

3. Projection equipment, cameras and radios must be serviced at regular intervals to insure maximum efficiency.

4. Broken or worn materials should be promptly repaired or replaced.

5. Perishable models, records, exhibits or displays need special attention and provision made for replacement.

B. Cataloguing, filing and classifying audio-visual materials for quick use is absolutely essential. It is essential that materials be readily available to teachers, hence a minimum of red tape is recommended.

1. Some scheme of cataloguing visual materials, such as the Dewey decimal system or other workable plan is recommended. Library practice is helpful here.

2. Lists or catalogues should be published with spaces left for corrections and additions.

3. Duplicate materials for popular subjects should be provided.

4. Storage space in a central location is essential. Materials should be carefully checked out and in.

C. Pointers on the care of the common audio-visual aids.

1. Lenses on projection apparatus and stereoscopes should be kept clean, free from dust, dirt and finger marks.

2. Motion picture projectors should be frequently oiled and kept clean, especially those parts over which the film travels.

3. The following contribute to rapid film deterioration and subsequent projection difficulties.
   a. Dirt accumulations.
   b. Worn sprocket teeth.
   c. Too strong tension.
   d. Poorly adjusted idlers.
   e. Misalignment of working parts.
   f. Surplus of oil and grit.
   g. Accumulation of loose emulsion and wax.

h. Careless rewinding, packing, shipping and storing.

i. Heat and a damp or too dry atmosphere.

4. Film inspection.

a. Every user of film should be provided with a bench film rewind supplied with a brake.

b. A bottle of the best grade of film cement (not glue or library paste), a safety razor blade or film scraper, and a small pair of scissors complete the necessary equipment.

c. For inspection, the reels should be placed on the rewind so that the film, while being rewound, travels from left to right, with the emulsion or dull side out. The film should be held between the left forefinger and thumb with just enough pressure to slightly cup the film.

d. If rewound very slowly, it is possible to detect every broken sprocket hole, tear, defective patch or misframe. Especial care must be exercised not to overspeed the rewinding process, lest the rough sides of an imperfect, bent, or distorted reel injure the film. It is impossible to detect imperfections when the film is traveling rapidly. If loosely rewound, the reel will be more than filled. There is then a temptation to "pull down" the film, causing it to tighten on the reel with a crunching sound. "Rain streaks" or scratches running longitudinally on the film are many times caused by "pulling down." When the streaks once appear, they cannot be permanently removed. The careful projectionist never "pulls down" film. He rewinds it a second time if necessary.

e. If the film breaks in the projector, the two pieces may be temporarily fastened by means of wire paper clips. The use of common pins is extremely dangerous, especially for the inspector, when he rewinds the film, unaware of the pin, may suffer a severe and painful injury.

f. When possible, repairs should be made as soon as the necessity for them is detected.

g. If for any reason surplus oil accumulated on the projector, it is quite likely that some will fall on the film, and tend to hold any dust or dirt that may come in contact with idlers, in the film work, and at the aperture, and may interfere with perfect projection or damage the film itself.

h. New film is said to be "green." In order that it may pass through the projector satisfactorily, the film must be waxed. When a new film is projected, if it is not waxed,

an accumulation gathers on the tension shoes immediately in front of the aperture, and on other surfaces. This substance becomes very hard and difficult to remove. It may be removed by using alcohol as a solvent. Never use a knife, because steel will scratch the surfaces. Deposits, scratches and dirt all tend to injure the film. The photographic quality may not be injured, but the film surrounding the sprocket holes may be scratched quite badly. Keeping a projector clean is an important task of the projectionist.

5. How to handle slides.

a. Finger marks and stains will be entirely avoided if slides are held by the edges. Soiled spots on the face of the plates may be removed with a soft cloth. Wood alcohol will remove obstinate stains.

b. When slides are repacked for shipment, at least two fibre strips should separate the first and last plate from either end of the packing box. Intervening slides should be separated at intervals by fibre strips so that the entire contents fit snugly. Breakage in transit will thereby be avoided.

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O. SURVEY OF DEPARTMENTS

The December, 1946, *Research Bulletin of the National Education Association* reports the results of a questionnaire inquiry made to determine the status of "Audio-Visual Education in City-School Systems." Approximately 3,700 school systems were circularized in cities of five population categories: over 100,000; 30,000-100,000; 10,000-30,000; 5,000-10,000, and 2,500-5,000. The greatest percentage of returns was received from the large cities, 65 per cent of which filled out the questionnaire. Only 22 per cent of the cities in the 2,500-5,000 category replied.

Audio-Visual Education in City School Systems

By

S. M. COREY

This issue of the *Bulletin* summarizes primarily the status quo. Current plans are described, as well as the direction and supervision of audio-visual materials and equipment, expenditures for audio-visual education, and improvements needed in the audio-visual program.

Approximately 80 per cent of the school systems in cities with more than 100,000 population have special audio-visual departments. Fewer than 40 per

cent of the cities in the next category (30,000-100,-000) reported that they maintain such special departments. As might be expected, less than 10 per cent of the cities in the smallest class have as yet instituted audio-visual departments. The general trend of the data in the *Bulletin* indicates that extensive and intelligent use of audio-visual instructional materials is much more likely to be made when there is some sort of special organization which attends to such matters than when no systematic plans are made.

One of the most interesting generalizations in the report is the rather clear recognition on the part of educators that the audio-visual instructional material programs now in operation are inadequate. Of all cities reporting, three-fourths estimated that their current methods of selecting, utilizing, and administering audio-visual "aids" was not satisfactory. Less than one-half of one per cent reported that they had overextended themselves.

In the large cities 65 per cent reported that audio-visual instructional materials were most extensively used in the elementary school. In the small schools, however, those in cities with populations from 2,500 to 5,000, only 23 per cent reported much use of audio-visual instructional materials in the elementary school while 66 per cent reported that the high school made more extensive use of such materials. If one considers the entire population of cities, the median percentage of teachers reported as using instructional motion pictures frequently was 15, whereas the median percentage reported as never making use of this instructional medium was 37.

Approximately 1,000 schools reported expenditures for 1945-46 for audio-visual instructional materials, apparatus, equipment, and administration. The median per pupil annual expenditure for this group was $0.33. Of the total amount of money spent in the 1,000 cities, 38 per cent went for salaries, 29 per cent for equipment, 19 per cent for the purchase of materials, 9 per cent for the rental of materials, and approximately 5 per cent for overhead and miscellaneous expenditures.

The officials filling out the questionnaires were asked to describe the major deterrents that had kept their audio-visual instructional materials programs from developing as rapidly as they should. The most commonly mentioned difficulty was lack of teacher interest, or, better, the fact that teachers were not prepared to make effective use of audio-visual materials. This situation emphasizes again the need for in-service training. The deterrent named by the next largest group of systems was the absence of a specially trained director with time and facilities to make his leadership effective. The third most frequently mentioned deterrent to the development of an effective program was shortage of essential equip-

ment. As might be expected, some of this shortage was a consequence of wartime restrictions.

Three other difficulties were mentioned with sufficient frequency to imply their importance: the need for extensive remodeling of buildings to adapt them to the use of audio-visual materials; the need for more funds; and, finally, the lack of a central housing agency or "center" for the materials.

It must be borne in mind, in interpreting these statistical results, that they probably describe a situation existing in the better schools in each classification rather than a situation which is typical of all schools. Only about one school out of four circularized within the population range from 2,500 to 30,000 answered the questionnaire at all. The chance is great that those schools failing to answer had little or nothing to report.

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P. TEACHER EDUCATION — IN-SERVICE

In-service opportunities for continuing professional growth are a necessity. Although teachers have undergone a period of pre-service education before formally entering upon their duties, this training can vary considerably in amount and quality. Also, while some teachers have studied recently, others had their courses years ago. Techniques and materials shift and new materials are introduced. Even the objectives of education shift; new values and emphases are given recognition. Therefore, it behooves every school administrator to do everything in his power to keep his teachers abreast of the sociological and professional changes.

In-Service Teacher Education
By
JAMES S. KINDER
In, Audio-Visual Materials and Techniques. New York: American Book Company. 1950. Pp. 557-61.

Although stimulating and encouraging teachers to keep growing is essentially a responsibility of the local school administration, this responsibility is shared by the state and by the teacher education institutions. The contributions which the two latter agencies can make are rather formal, yet they are important. The state may decree that certain courses or evidences of growth be presented by the teacher periodically as a condition for continuing in the profession. The responsibilities of teacher education institutions lie in providing courses, workshops, institutes, and other opportunities for teachers who are already in service. These opportunities are plentiful. Nearly all teacher education institutions offer summer courses, evening courses, late afternoon courses, or extension courses.

Yet, all these things are not enough, because so frequently they are formal and are wrapped with the red tape of credits, grades, tuitions, and degrees. An inherent desire for growth and development on the

part of the teacher is often lacking. It is, therefore, at this point, that the local school administration must take the lead in providing opportunities for growth, and creating a desire to grow.

Wherever possible, co-operation between the school and the teacher education institution is most desirable. But an expanding program of audio-visual education imposes upon the local administration the responsibility of doing more than merely co-operating with the teacher education institutions. The superintendent of schools through the director of audio-visual education must organize specific services for the teachers of his school system so that they can and will make intelligent use of audio-visual materials. Here in brief are some of the suggested in-service teacher education services:

1. The director of audio-visual education or some other qualified person or persons may teach courses in the use of these materials. In some instances these courses can be integrated with the offerings of a local college or university and credit can be allowed.

2. Short courses of one or two weeks for intensive work may be arranged. These courses might be organized as workshops or clinics.

3. Institutes and demonstrations may be held.

4. Specific demonstration lessons given in various buildings during regular school hours with regularly scheduled classes are more helpful than generalized demonstrations. A demonstration lesson in arithmetic will mean most to arithmetic teachers, although teachers of other subjects may get something from it. The point is that demonstration lessons which approximate as closely as possible the situations that particular teachers face are most beneficial. This principle provides almost endless opportunities for training.

5. Individual conferences between teachers and the director at both the audio-visual center and in the school develop interest and understanding.

6. Production of study guides and other printed "helps" which will bring to teachers specific suggestions for the use of audio-visual materials is also valuable.

7. Encouragement of researches on the values and uses of audio-visual materials is essential. Also, the summarization and annotation of researches, articles, books, and pamphlets, and the distribution of these compilations in the form of "service bulletins," newsletters, and reports to the school personnel, are highly recommended.

8. Arranging for individual instruction in the operation of equipment by building directors or by personnel from the central office is a necessity.

9. Regularly scheduled screening or preview sessions to which teachers may go to keep abreast of what is new in films, filmstrips, records, and transcriptions are common practice. These screening groups may be the final authority in recommending the materials which the district should purchase. This ensures the purchase of materials which teachers find most useful.

10. Discussions, reports, and talks organized as programs for faculty meetings are other aspects of the training program. Supervisors and interested teachers can give firsthand accounts of what they are doing with audio-visual materials.

11. Interschool and intraschool visits provide opportunities for teachers to see how other teachers are using materials in their classroom work.

12. Another source of in-service training is opened up through the local production of audio-visual teaching materials. Learning by doing generates enthusiasm. Production may be limited to the preparation, binding, and cataloging of slides, the mounting of flat pictures, building models, collecting and arranging exhibits, or the program may develop to the point where motion picture films are planned, photographed, edited, and utilized. Such a project may involve a great many teachers in a co-operative effort. By working with projects of this type, teachers gain an intimate understanding of the possibilities of the various materials.

In-service education of teachers has its counterpart in the trainee programs of business and industry, and it was a very important aspect of the audio-visual program of the Armed Services during the war. Both the Army and Navy recognize training as a never-ending process. A multitude of training aids was always available, and naval officers, for example, were constantly learning from the time they entered service until they were mustered out. A naval officer's training started before he was commissioned. After the ship's officer personnel was selected, specific training was inaugurated. This training was continued after the ship was commissioned. In like manner, the trainee programs of business and industry are recognized as indispensable. This is the only way that personnel can keep abreast of a fast-moving world. Planned training programs with training equipment are held in special training laboratories. Participation of the personnel in these programs is compulsory.

Many school systems are currently sponsoring effective in-service education programs along the lines outlined above. In some cases the program is compulsory, but in most cases it is voluntary. The one in Portland, Oregon, has been well organized and is doing an effective job. It is offered as a continuous refresher training course to keep teachers thoroughly abreast of the development in a-v education. The director of the course says:

"The Portland in-service training course comprises 12 two-hour sessions, one each week. It is offered twice a year and has been well attended. [Last year

Portland gave 26 such courses and 658 teachers attended.] Apparently, the teachers are interested in this teaching technique and are willing to spend extra time in mastering it. The two hours are divided into a sixty-minute period on materials and utilization, a ten-minute intermission, and a fifty-minute laboratory period. In the latter period assistance from the departments' technicians has been necessary, as forty pupils [teachers] are far too many for one instructor in an audio-visual aids laboratory.[1]

The organization of workshops and clinics has been found to be more functional than most formally organized classes. Actual teacher needs seem to be given more consideration.

Audio-visual classes, workshops, or clinics must be "audio-visual" in method as well as name. Reading books, memorizing nomenclature, and writing lesson plans are inadequate. Teachers must learn firsthand —by doing. This applies to learning to operate machines, producing materials, collecting and evaluating materials, and to formulating objectives.

Workshop groups should be small so that teachers can get firsthand experiences. There should be an ample array of equipment and supplies. The work should not be wedged in between fifty-minute bells. A leisurely laboratory procedure of reading, observing, doing, and evaluating will get better results. During the course of the workshop, teachers should see demonstration lessons which use audio-visual curriculum materials. Teachers should be encouraged to tell why they are taking the course or workshop, and what questions they would like to have answered. Such a procedure will help give the workshop real value.

In 1946, an audio-visual committee at the Western Illinois State Teachers College conducted a survey of 647 schools and school systems. One question asked teachers what kind of a course or procedure they favored for preparation in the utilization of audio-visual materials. The results were: 128 favored formal courses in colleges or universities; 239, extension courses conducted by colleges or universities; and 504, the short, informal, noncredit course of the workshop type.[2]

Encouraging the professional growth of a teaching staff is one of the major responsibilities of those charged with managing a modern school, and helping teachers to improve their utilization of audio-visual materials is but one phase of the more general problem of in-service training. Any vital program of in-service training to improve instruction will cause teachers to use a greater variety of instructional materials. However, since many capable teachers have been in service since before the present emphasis on audio-visual materials began there is usually more need for direct help with such materials than in many other areas of the teachers' work.

Assisting Teachers Toward Improved Use of Audio-Visual Materials

By the Sub-Committee on Audio-Visual Education, North Central Association of Colleges and Secondary Schools. In, Better Teaching Through Audio-Visual Materials. North Central Association Quarterly. Vol. 23, No. 2. Oct., 1948. Pp. 215-18.

One essential to adequate professional growth on the part of a teaching staff is the existence of conditions favorable to good teaching. Hence many of the suggestions made elsewhere in this chapter concerning the organization necessary for a successful audio-visual program also have a direct bearing on the effectiveness of the in-service training. Some of the major objectives of the in-service training program are:

1. To enable the teachers to understand and appreciate the basic principles underlying the successful utilization of instructional aids.
2. To help teachers develop an understanding and an appreciation of the place of audio-visual materials in the educational program.
3. To familiarize teachers with the most effective techniques to be followed in utilizing these materials.
4. To help teachers develop criteria for evaluating these materials and measuring their educational contributions.
5. To familiarize the faculty with the service and facilities of the local audio-visual center.
6. To let the teachers know the procedures to be followed in requesting materials and services from the center.
7. To help the teachers become familiar with the various types of audio-visual aids and the advantages and limitations of each.
8. To familiarize the teachers with the techniques and procedures to be followed when utilizing these tools in the classroom.

1. Trenholme, Kingsley, "In-Service Training in Audio-Visual Aids," See and Hear. 1: 33-39, March, 1946.
2. The Function of an Audio-Visual Department in a Teacher Education Institution. Macomb, Ill.: Western Illinois State Teachers College, Bulletin, Vol. 26, No. 4, Dec., 1946.

9. To help the teachers become acquainted with the various sources from which these materials can be obtained.
10. To provide instruction in the operation of such equipment as is commonly needed in the audio-visual program.

It is important that teachers have or develop the point of view that audio-visual materials are curricular materials just as are books or periodicals, and that a pupil's reaction to the use of audio-visual materials is just as conducive to learning as is his reaction to more traditional materials. (Many teachers still feel that they cannot use audio-visual materials and have time to "teach" too.) In order to use audio-visual materials effectively certain more or less technical skills are desirable; in fact, some are necessary. Among the most important of these technical skills are:

1. Operating of lantern slide, filmstrip, and opaque projectors.
2. Operating silent and sound motion picture projectors.
3. Learning to place the projector and screen so that all observers will be seated at the correct viewing angle.
4. Operating recording and playback machines of the disk, metal tape, or wire type.
5. Recognizing and compensating for ear defects, when using auditory aids.
6. Making hand-made lantern slides of standard size.
7. Making microscopic slides.
8. Using a camera in making black and white or colored lantern slides.
9. Using guides and directories to locate a specific aid desired.

Various procedures have been found effective in helping teachers attain such objectives and develop such skills as those listed in the preceding paragraphs. In fact, many teachers entering the profession now have had at least a limited amount of experience with a relatively wide range of audio-visual materials. Most colleges that train teachers offer elective or required courses in audio-visual education. In some special methods classes considerable emphasis is placed on the use of audio-visual devices and materials adapted to a specific field of instruction. More and more the regular academic and professional courses in college are utilizing audio-visual materials so that college students, including prospective teachers have an opportunity to become familiar with such materials from first-hand experience. In some institutions students are expected to have certain contacts with audio-visual materials in connection with student teaching, either as a regular required part of classroom teaching or as special assignments.

One important means by which an experienced teacher can usually increase his proficiency in the use of audio-visual materials is by enrolling in a college course devoted to this subject. A number of institutions provide such courses for experienced teachers during the summer sessions, on Saturdays, or in the evenings during the regular school year. In addition, many colleges offer work of this type through special conferences, work shops, or other short intensive courses, with or without credit toward an advanced degree. Teachers should be encouraged to take advantage of some of these means of improving their individual abilities in the field of audio-visual education.

Although many opportunities are available to teachers to extend their knowledge of audio-visual materials through the facilities of colleges and universities, there will still be, in the average school, a considerable number of teachers who, for one reason or another, do not choose to take advantage of additional regular college work. Therefore the major part of the in-service training program will probably have to be at the school itself, where the teachers are regularly employed.

As has been pointed out elsewhere, experience has often demonstrated that one of the chief factors in encouraging professional growth of teachers in service is the presence of favorable working conditions which will permit and stimulate teachers to work up toward the limit of their abilities. Another important principle to be followed in an in-service program is that teachers frequently experience more professional growth through participation in cooperative efforts to improve the school's instructional program than by conscious attempts to identify and strengthen their individual professional weaknesses. Hence, instead of concentrating on defects in the instructional techniques of individual teachers the in-service program in audio-visual education should probably emphasize a variety of ways of adding to the school's instructional programs.

Some of the activities which are often helpful in enabling teachers to improve their techniques of using audio-visual materials are:

1. Providing an opportunity for each instructor who desires an opportunity to learn to operate each piece of audio-visual equipment.
2. Helping instructors who are interested in preparing hand-made lantern slides and photographic slides to be used in a specific teaching situation.
3. Planning group discussions, panels, or forums to illustrate how audio-visual materials can facilitate instruction in a given subject area.

4. Arranging demonstrations so that small groups of teachers can see these materials used in actual teaching situations.

5. Helping teachers in preparing or using records, transcriptions, and radio programs.

6. Demonstrating simulated broadcasting by using a sound motion picture projector or a public address system.

7. Demonstrating satisfactory ways of mounting, filing, and indexing flat or un-projected pictures.

8. Helping teachers organize and plan field trips.

9. Providing hand books and bulletins showing what audio-visual materials are available and how they may be obtained.

10. Helping teachers set up tests or other ways of evaluating the educational contribution of various audio-visual materials.

11. Encouraging the previewing of slides, films, and recordings.

12. Allowing teachers to see films and film strips on various phases of teacher education, including audio-visual education.

These are but samples of what the alert superintendent, principal, or director of audio-visual materials can do in helping teachers improve their use of audio-visual materials and thereby make more effective the educational program of the school. Such a program may very well be but one phase of a more general faculty study of ways and means of improving the whole curriculum and the teaching procedures throughout a school or school system. It is usually wise to begin such a program on a small scale by helping teachers individually and in groups as they feel a need for help, and as has already been pointed out, by concentrating on the solution of specific instructional problems rather than on the conscious improvement of individual teachers. Furthermore, the principle of voluntary participation on the part of teachers as a rule leads to greater professional growth than does a wholesale attempt at universal participation before certain members of the staff are ready. However, it should be kept in mind that there is no one best in-service training program in audio-visual education. Very satisfactory results can be expected in any school where the instructional staff is eager to do good teaching and where the administration cooperates in providing the necessary facilities and is extending a high degree of professional leadership. o o o

Four kinds of in-service training have been attempted. These are: orientation, group meetings, demonstrations and school visits. Each one gives strength to the entire program and all are felt to be helpful.

The Audio-Visual Program in the Detroit Public Schools

By
ROBERT E. LE ANDERSON

In, Audio-Visual Programs in Action. Ford L. Lemler, Editor. Ann Arbor: Michigan Audio-Visual Association. April, 1951. Pp. 47-49.

General Orientation: Teachers are able to order visual materials and use them to better advantage in the classroom if they understand the work and the procedures which are necessary in making such teaching aids available to schools. To assist them in understanding the entire procedure, a series of "Open House" meetings are held each semester of the school year. At this time an explanation is given of the processes involved in previewing materials, purchasing, inspecting, repairing and shipping. The organization of the various catalogues is explained and a tour of the building is made so that all can see at first hand just what the detailed procedures are which must be completed before the film or filmstrip arrives at the school. Following this, a film is shown which relates to good projection. Recently the film, *Facts About Films*, has been used.

Group Meetings: Many such meetings are held during the school year. These meetings can be on a subject matter basis as are the district meetings of the Social Studies Department. A number of these district conferences are devoted to visual aids each year. Similar meetings have been held with administrative officers. For example, recent demonstrations of visual techniques were given for both the Supervising Principals and the Superintendent's staff. In another instance, all Home and Family Living teachers met for a discussion and preview of films relating to that area.

Demonstrations: Teachers are always interested in seeing and hearing how others use films. Actual demonstrations represent a "sure fire" technique for a good attendance. Recently two unusually successful meetings were conducted which were attended by a total of 1,800 teachers and students. In this instance, the film was in the area of mental health and the persons who used it were well established in their fields.

Perhaps the most effective demonstrations, however are those which are limited to smaller groups. It is common practice to conduct such demonstra-

tions whenever outstanding materials come to our attention. One such meeting held recently involved a newly produced film entitled, *The Felt Board in Teaching* and a filmstrip, *Bulletin Boards at Work.*

School Visits: One very practical way to discover whether the catalogues and other materials are really serving their intended purpose is to visit schools and talk to principals and teachers. Many times this is the only way to discover items which may seem minor but which are actually of great importance to the teacher. Such a matter as having a few catalogues go into schools inaccurately punched for the regular school binders can cause great inconvenience to the conscientious teacher. Every school system is blessed with a number of gifted teachers who have found ingenious ways of using visual materials. Demonstrations by such teachers are always welcomed by others. Principals are always eager to know of successful techniques which can be made available to their teaching staffs.

Helpful Activities: There are a number of activities and techniques which have been effective in the Detroit visual program. Stated briefly, some are:

A Visual Round Table, composed of especially interested teachers, meets from time to time either in a school or at some business establishment in town to examine newly developed visual materials.

The Open House for both new and experienced teachers gives an insight into the details necessary in administering the program . . .

When local departmental institutes and conferences have been held, a sectional meeting devoted to the use of visual aids has developed interest on the part of those in attendance.

Faculty meetings within schools are sometimes devoted to discussions of teacher education films and their significance to the local instructional program.

In addition to the supplementary notices of materials which are sent to all schools regularly, a notice in the official school paper, *The Detroit Schools,* calls attention to new films, filmstrips or recordings.

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│        USE FILMS IN THE TEACHER EDUCATION     │
│                    PROGRAM                     │
│   Accent on Learning                          │
│           Drawing as Communication            │
│                   Chalkboard Utilization      │
│   Magnetic Tape Recording                     │
│           Making Handmade Lantern Slides      │
│                   New Tools for Learning      │
│   Opaque Projection                           │
│           The Felt Board in Teaching          │
│                   Wet Mounting Process        │
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Q. TEACHER EDUCATION – PRE-SERVICE

From these many possibilities for change we select a smaller number of goals for the teacher education institution which are specific, obtainable and of fundamental importance in improving teacher competency in visual education.

Teacher Education and Visual Education for the Modern School

By
JOHN S. CARROLL
San Diego: Office of the Superintendent of Schools. San Diego County, California. Education Monograph, No. 16, Sept., 1948. Pp. 113-14.

1. The teacher education institutions should increase the emphasis upon their v i s u a l education programs. This recommendation is made by approximately eighty percent of the school teachers and ninety per cent of the teacher education institution instructors who were included in this study.

2. Emphasis could well be placed upon a formal course or courses in visual education and upon the sufficiently frequent, varied and skillful use of visual aids in the regular college-level work.

   The value of a state requirement of a course in visual education for a teacher's credential should lead to the adoption of such a provision by states in addition to Pennsylvania, New Jersey and California.

3. The teacher education institutions should require their visual education instructors to be well informed in their field. These instructors should take further work in the area, perhaps through participation in one of the summer workshop courses in visual education, in extension courses or summer and regular university and college work.

4. The teacher education institutions should provide for the education of instructors in service on the college level. The instructors might improve their teaching techniques through committee work and group participation in the organization of an active visual education program for their own teacher education institution.

5. The teacher education institutions should give conscious attention to the task of providing some acceptable form of supervisory help in the development of a more objective type of instruction.

6. The teacher education institutions should help coordinate the plans for instruction in visual education. This coordination should include contributions by the teacher education institution administrators and instructors, and by school administrators and teachers.
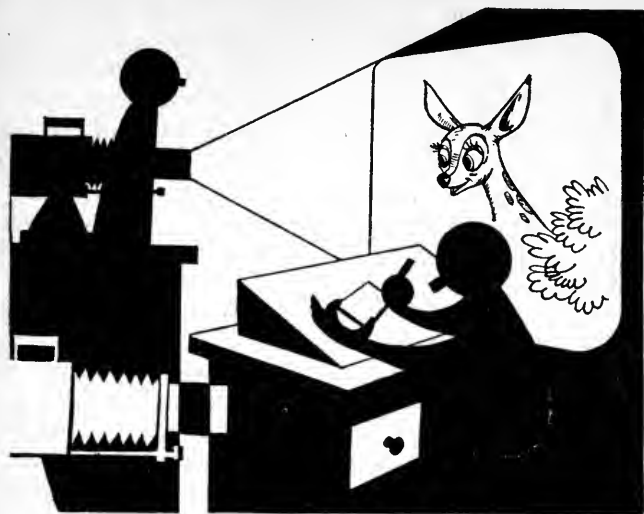
7. The teacher education institutions should maintain complete visual education centers. Such centers should be somewhat in advance of the need typified by the modern school. The newest developments in the field could be there on demonstration. Commercial concerns are cooperative in such professionally controlled activities. Each new teacher would bring new and needed ideas to the school in which placement is made.

8. The teacher education institutions should have a planned collection of the available literature in the field of visual education. While this material is quite limited, certain items are available.

9. The teacher education institutions should maintain a sufficiently complete educational laboratory so that continuing data could be gathered on the relative merits of objective teaching on the several academic levels, including the college level.

10. The teacher education institution and the staff members thereof should be sources for professional contributions to the literature of visual education. Good and basic books on the subject are needed to add to the few good books already available. No book or convenient combination of books thus far published contains the necessary information that would be needed in a text or texts or as a reference for a course in visual education such as is contained in outline form in the Appendix to this monograph.

The above list could be extended to include a greater number of items pertinent to the improvement of the visual education program of the teacher education institution. However, the ten points listed incorporate fundamental recommendations that are based upon the investigations, findings, and conclusions of this monograph.   ✺ ✺ ✺

A Study of Teacher Skills and Knowledges Necessary for the Use of Audio-Visual Aids

By
AMO DE BERNARDIS
and
JAMES W. BROWN

The present emphasis on the use of audio-visual instructional materials in education gives rise to a need for training teachers in the skills and knowledges necessary for effective utilization of these aids. The question of what skills and knowledges are essential in order that the classroom teacher may make proper use of these materials concerns both the pre-service and the in-service training programs. Too often teachers of courses in audio-visual instruction give main consideration to their own particular interests. For example, instructors who have highly developed skills in production aspects of the course may give these skills the major emphasis and tend to neglect other areas which are equally important.

This study, which was made to determine what skills and knowledges are regarded as important for the classroom teacher, was based on the belief that a composite summary of opinions of experienced teachers, audio-visual supervisors, general supervisors, and administrators would give this information.

COLLECTION OF DATA

An "Audio-visual Instructional Aids Check Sheet," presenting short statements concerning audio-visual instructional skills and knowledges was prepared. The check sheet included four sections: (1) mechanics, (2) utilization, (3) production, and (4) facilities. Each section was divided into two parts: items dealing with skills and items dealing with knowledges.

Persons receiving the check sheet were asked to fill it out according to the following directions:

a) In the spaces provided, rate each item according to your appraisal of its importance to *you as a teacher,* or, if you are a superintendent, a principal, or a supervisor, rate it according to your estimate of its importance to teachers with whom you work.

In filling in the spaces, use the following scale: (1) of great importance, (2) of considerable importance, (3) of average importance, (4) of importance only in special cases, and (5) of little importance.

b) At the same time you are rating each item, *encircle the numbers of the statements* in either the "skills" or the "knowledges" column for those things which you now can do (skills) or which you now know (knowledges).

A total of 244 check sheets was sent out, 44 to supervisors or directors of audio-visual aids programs, and the remaining 200 to teachers, supervisors, and administrators registered in the summer - school courses at the University of Chicago, Northwestern University, and the University of Wisconsin during the summer of 1945. A total of 199 check sheets was returned, of which 49 were found to be improperly filled out and not suitable for use in the compilations.

Personal information supplied on the sheets revealed the general characteristics of the groups used in this study. The average teaching experience of the group was 13.75 years, with a range of from one year to 38 years. There were 63 respondents who were employed at the elementary-school level, 68 at the secondary-school level, and 37 at the college level.[1] Fifty-three per cent of the persons responding had some responsibility for the co-ordination of the audio-visual program in the school. Forty-four per cent had had special training in the use of audio-visual aids; 22 per cent were taking training; and 33 per cent had had no formal instruction.

The check sheets were divided into four groups: (1) 71 sheets from classroom teachers, (2) 24 sheets from classroom teachers with additional responsibilities of co-ordinating audio-visual instructional materials in their own schools or school systems, (3) 27 sheets from supervisors or directors of audio-visual programs on a full-time basis, and (4) 28 sheets from superintendents, principals, and general supervisors.

Tabulations were made to obtain the arithmetic average of the ratings given by each of the groups to each of the items. Similar computations were made to determine the average percentages of respondents who could perform the skills or who had the knowledges listed under each section of the check sheet. Finally, the average ratings and average percentages presented in Tables 1 and 2 were obtained for the group as a whole.

FINDINGS

The data gathered in this study justify certain generalizations regarding the skills and knowledges necessary for the use of audio-visual aids.

There was a high degree of consistency in the ratings given the items by all four groups in all sections of the check sheet, with the exception of the ratings on skills in the section dealing with facilities. In view of the wide background of experience of the four groups, it is significant that there should be a high correlation on the ratings of the various items. Any person, therefore, who is responsible for pre-service or in-service training should give major emphasis to those items which received high ratings.

Mechanics.—The percentages of respondents who had skill or knowledge of items on the mechanics section of the check sheet and the average ratings given

these items would indicate that the following points are significant.

1. Teachers are interested in learning to operate the various types of equipment. This conclusion is shown by the high ratings given to the operational skills and the relatively high percentages of respondents who have learned to operate audio-visual equipment. Even though it is advisable to provide student operators to relieve the teacher of the mechanics of operation, the teacher should be able to take over when the situation demands.

2. The high rating given Item 1 in Table 1, "Operate 16-mm. silent and sound projector," and the high percentage of respondents who knew how to operate this equipment are indicative of the publicity that the motion picture has received as a tool in education. They also show how valuable the teachers consider this device. Item 7 in Table 1, "Operate 35-mm. sound and silent filmstrip projector," received an average rating of 2.3 as compared with 1.6 for 16-mm. projectors, and 56 per cent of all respondents could operate the former as compared with 90 per cent who could operate the 16-mm. projector. It would seem that more emphasis should be put on training teachers to use other audio-visual tools in addition to the 16-mm. projectors, for there are a number of others that can also contribute a great deal to the teaching and learning process.

3. Certain items, such as Item 11, Table 1, "Operate transcription player"; Item 12, "Operate recording machine"; and Item 15, "Operate wire recorder" were given low ratings, and small percentages of persons possessed these skills. Because of the relative newness of these pieces of equipment, most teachers had had little opportunity to use them, and this fact probably accounts, in some degree, for the low ratings.

4. Item 14 in Table 1, "Operate micro-projector," would be of use to science teachers only, and this fact is no doubt, the reason for its low rating.

5. There was a tendency on the part of the respondents to rate high the items with which they were familiar. This tendency might indicate that, if respondents had been familiar with newer pieces of equipment, these items would have received higher ratings.

Utilization of visual aids.—This section was, on the whole, rated higher than any other part of the check sheet. The percentages of respondents who had skill in, or knowledge of, items on this section and the average ratings given the item indicate that the following conclusions are important.

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1. The total number of respondents employed at the elementary, secondary, and college levels is greater than the total number of questionnaires used in this study because some respondents taught at two levels but filled out only one check sheet.

TABLE 1

AVERAGE RATINGS ON IMPORTANCE OF SKILLS IN USE OF AUDIO-VISUAL AIDS GIVEN BY 150 TEACHERS, SPECIALISTS IN CHARGE OF SUCH PROGRAMS, AND SCHOOL ADMINISTRATORS, AND AVERAGE PERCENTAGE OF RESPONDENTS WHO POSSESSED EACH SKILL

SKILL	Average Rating on Importance*	Average Percentage of Respondents Possessing Skill
Mechanics:		
1. Operate 16-mm. silent and sound projector	1.6	90
2. Operate lantern-slide projector	1.8	81
3. Set up portable screens	1.9	87
4. Operate opaque projector	1.9	76
5. Operate electric phonograph	2.2	81
6. Operate duplicating equipment (mimeograph, Ditto, etc.)	2.2	81
7. Operate 35-mm. sound and silent filmstrip projector	2.3	56
8. Change lamps, clean and oil projectors	2.4	57
9. Operate radio receiver	2.6	56
10. Check and splice 16-mm. film	2.6	54
11. Operate transcription player	3.1	42
12. Operate recording machine	3.3	28
13. Operate public-address system	3.4	45
14. Operate micro-projector	3.4	20
15. Operate wire recorder	3.7	11
Utilization of visual aids:		
16. Select appropriate audio-visual materials for curriculum	1.1	83
17. Use films efficiently in teaching	1.2	81
18. Make effective use of exhibit materials in teaching	1.4	77
19. Use graphic materials effectively in teaching	1.4	75
20. Use slides and filmstrips effectively in teaching	1.4	73
21. Evaluate results of use of audio-visual aids	1.6	61
22. Organize and conduct field trips successfully	1.7	71
23. Prepare and use study guides for use of audio-visual aids	1.8	59
24. Use radio and transcriptions effectively in teaching	1.9	49
Production of visual aids:		
25. Mount, file, and classify flat pictures	2.0	74
26. Prepare maps and charts	2.2	65
27. Prepare exhibits and dioramas	2.3	57
28. Make Ditto master copies	2.5	64
29. Cut mimeograph stencils	2.8	62
30. Mount and bind lantern slides	2.8	45
31. Operate 16-mm. motion-picture camera	2.8	44
32. Make handmade lantern slides	2.8	38
33. Use various construction materials (wood, plastic, clay, and metal)	2.9	37
34. Use a still camera in making indoor and outdoor pictures in color and in black and white	3.0	59
35. Edit and splice 16-mm. film	3.1	38
36. Make photographic lantern slides	3.5	21
37. Make photographic copies	3.6	23
38. Develop and print photographic films	3.7	27
39. Operate enlarger	3.7	27
Facilities:		
40. Arrange classroom for best seating	1.4	82
41. Select and place screen to fit classroom	1.4	75
42. Improve room acoustical conditions within limits of facilities available	1.8	51

*The ratings are based on the following scale: 1 = of great importance, 2 = of considerable importance, 3 = of average importance, 4 = of importance only in special cases, and 5 = of little importance.

1. Although this section received high ratings, the percentages of respondents who had skills or knowledges in this area were not so high as would be expected. It is usually assumed that these skills and knowledges are taught in courses in methods or that teachers will acquire these skills in their work. The results of this survey do not confirm this assumption. Obviously those planning in-service and pre-service training programs for teachers should place more emphasis on the skills and knowledges needed in the utilization of visual aids.

2. Under skills, Item 21, Table 1, "Evaluate results of use of audio-visual aids"; Item 23, "Prepare and use study guides for use of audio-visual aids"; and Item 24, "Use radio and transcriptions effectively in teaching" were rated high, yet large percentages of the respondents lacked experience in these skills. On the basis of the high ratings given these items, they should be given major emphasis by persons planning courses in audio-visual instruction.

3. It is interesting to note that only 65 per cent of the respondents knew the source of audio-visual materials, as is indicated by Item 11 in Table 2. Too often it is assumed that teachers have adequate information on sources of materials. Supervisors and administrators should endeavor to keep teachers up-to-date on latest sources of audio-visual materials.

Production.—This section received lower ratings, on the whole, than did the other sections of the check sheet. The data presented in the tables for this section suggest the following conclusions.

1. Teachers in general are more interested in having ready-made materials than in spending time in constructing their own.

2. Items receiving high ratings in this section are those dealing with skills that teachers might readily put to use in the classroom, such as mounting and classifying pictures and preparing maps, charts, exhibits, and dioramas.

3. Items dealing with more complex technical skills, such as photography, were, on the whole, rated rather low.

4. Only small percentages of teachers had knowledge of the costs and sources of construction materials (Items 13 and 14, Table 2), although these items were considered to be of considerable importance. Teachers should, therefore, be given more information of this type.

Facilities.—The problem of providing proper facilities for the use of audio-visual aids is not usually thought of as the teacher's responsibility. From the ratings given the items on the facilities section of the check sheet, it is clear that teachers are interested in knowing how to improve facilities for the use of audio-visual aids. The following seem to be the most significant points of the data.

1. Item 18, Table 2, "Safety practices to be observed in handling electrical equipment," was given a rating of 1.6, but 48 per cent of the respondents did not know electrical safety practices. With the increased educational use of these devices, it is obvious that safety precautions should be stressed in teacher training.

2. Most items dealing with improving facilities for the use of audio-visual aids received high ratings. However, with the exception of Items 40 and 41 in Table 1 and Item 19 in Table 2, almost half the respondents did not have skill in the use of, or knowledge of, the items in this section. Until classrooms are adequately equipped, it would appear that emphasis should be placed on what the teacher can do to improve existing facilities in the classroom for use of audio-visual aids.

IMPLICATIONS OF DATA FOR TEACHER TRAINING

The data gathered in this study have certain implications for pre-service and in-service training. Listed below are a few suggestions for the use of the check sheet and the results of this study.

1. All items which received average ratings of 2.9 or higher can be considered the important skills and knowledges necessary for the effective use of audio-visual materials. Skills or knowledges receiving ratings below 2.9 are not considered really unnecessary in the use of audio-visual aids; these items should be included in the in-service or pre-service training of teachers but only if time permits after the more pressing items are cared for.

2. Present courses in audio-visual instruction should be compared with the results of this study.

3. Instructors conducting in-service or pre-service courses in audio-visual instruction may have class members fill out a similar check sheet and use the results as a guide to topics which should be covered on the course. The results might well be compared with those obtained in this study.

4. The check sheet could be used to obtain from teachers in pre-service or in-service courses a vote on the items or topics which should be included in the course and those which should be given the greatest amount of emphasis. This rating would, of course, be based only on the class members' interests and understanding of the relative importance of each of these items. It would not take into consideration items which the students, because of lack of familiarity, were not able to rate intelligently in terms of their present or future needs.

5. The check sheet could be used as a personal-progress chart by individual teachers to take an inventory of audio-visual instructional skills and knowledges which they possess. This procedure will help teachers to ascertain their strengths or weaknesses in the use of audio-visual aids.

TABLE 2

AVERAGE RATINGS ON IMPORTANCE OF KNOWLEDGE OF ITEMS IN USE OF AUDIO-VISUAL AIDS GIVEN BY 150 TEACHERS, SPECIALISTS IN CHARGE OF SUCH PROGRAMS, AND SCHOOL ADMINISTRATORS, AND AVERAGE PERCENTAGE OF RESPONDENTS WHO POSSESSED KNOWLEDGE OF EACH ITEM

KNOWLEDGE	Average Rating on Importance*	Average Percentage of Respondents Possessing Knowledge
Mechanics:		
1. Types and advantages of various types of projection equipment	1.9	73
2. Fundamentals of sound and silent projector operation	2.0	81
3. Fundamentals of sound recording	2.9	38
4. Types and advantages of various types of recording equipment	2.9	33
5. Types and values of various cameras	3.1	29
6. Fundamentals of optics	3.2	37
Utilization of visual aids:		
7. Effective utilization techniques	1.3	63
8. Best aids for specific purposes	1.4	61
9. Criteria for evaluating effectiveness of audio-visual materials	1.7	64
10. Psychological basis for use of audio-visual instructional materials	1.7	61
11. Sources of audio-visual instructional materials and costs	1.8	65
12. Finding of scientific studies on use of audio-visual instructional materials	2.5	50
Production of visual aids:		
13. Types of mounts, sources, and costs	2.5	40
14. Kinds, sources, costs of construction materials	2.5	37
15. Basic tool processes for wood, metal, plastics, and paper	3.0	22
16. Fundamentals of photography, lighting, painting, developing, and composition	3.3	28
17. Types and characteristics of photographic films and papers	3.3	22
Facilities:		
18. Safety practices to be observed in handling electrical equipment	1.6	52
19. Methods and materials for darkening rooms	1.8	70
20. Methods and equipment for ventilating rooms	1.8	48
21. Methods and conditions for storage of audio-visual materials	2.1	51
22. Types of screens and advantages of each	2.2	52
23. Fundamentals of acoustics	2.5	34

*The ratings are based on the following scale: 1 = of great importance, 2 = of considerable importance, 3 = of average importance, 4 = of importance only in special cases, and 5 = of little importance.

VII   Research

Research
on
Value
and
Utilization
of
Audio-Visual
Materials
in
Education
and
Related Fields[1]

By
JAMES S. KINDER

In a recent article entitled, "Professionalizing the Audio-Visual Field," James D. Finn says, "The most fundamental and most important characteristic of a profession is that the skills involved are founded upon a body of intellectual theory and research. Furthermore, this systematic theory is constantly being expanded by research and thinking within the profession. As Whitehead says, . . . the practice of a profession cannot be disjoined from its theoretical . . . The antithesis to a profession is an avocation based upon customary activities and modified by the trial and error of individual practice. Such an avocation is a Craft . . ." (11:8)

Research in audio-visual materials and techniques is important — more important than many practitioners believe. Without research audio-visual educators are reduced to gadgeteers and cannot qualify as professional educators. It is only through research that hypotheses are validated. Science and medicine would be little more than quackery without research; they would still be in the days of black magic and alchemy. "Hunches" must give way to scientific law. Modern industry, no less than the professions, checks its processes, materials, and products. The research laboratory is an integral and accepted part of every industry. Car manufacturers, we are told, never place a new model on the market until it has been tested and retested under exacting conditions — conditions not unlike those to which owners will later subject their cars.

This chapter will give an over-all picture of research in audio-visual education, but will not attempt, because of space limitations, to spell-out specific research findings. Teachers and students will be astonished at the volume of a-v publication, not all of which is true research, but it all adds, nevertheless, to the development of the field. Allen (2) has pointed out emphatically that there is no paucity of a-v literature. Each piece of research, no matter how small, helps fill in the history, background, and setting of the profession as it exists today. Even individual reports, summaries, surveys, personal experiences, panel discussions, and minor utilization descriptions have their place in the body of growing literature. This sort of documentation is necessary in every scientific field, and gives a healthy "assist" to more exacting research.

SUMMARIES AND COMPILATIONS OF RESEARCHES

Before 1935 most of the researches in audio-visual education were scattered and often obscure. Students interested in the early studies will find most of them listed in five references: Freeman (13 — 1924), Johnson (18 — 1927), Wood and Freeman (41 — 1929), Weber (39 — 1930), and McClusky (26 — 1932).

The first attempt at a truly definitive compilation of a-v research came in 1937 with a publication by Dale, Dunn, Hoban, and Schneider under the title *Motion Pictures in Education* (7). This compilation went beyond a mere listing of researches, speeches, convention topics, surveys, etc.; it categorized and summarized the listings. The compilation was started as a Works Progress Administration project, but was later taken over and completed by the American Council on Education Committee on Motion Pictures. In large measure, the value of this book today is historical.

Since 1940, there have been numerous bibliographies and syntheses of audio-visual research. In 1946, Carroll (5) briefly surveyed the literature in his book entitled *Teacher Education and Visual Education for the Modern School*. Another short summary limited to films in education appeared as a chapter in *Film and Education* edited by Elliott (9). A useful and generally available summary of researches up to 1949 can be found in the *Encyclopedia of Educational Re-*

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1. A substantial part of the material in this chapter appeared in abbreviated form in an article headed, "Audio-Visual Research — Where to Find It," by the author in *Audio-Visual Communication Review*, Vol. 2, No. 1, Winter, 1954.

search, Revised Edition, Walter S. Monroe, editor (30). Constance Weinman (40) put together an extensive bibliography specifically for teachers in the elementary field.

One of the most helpful summaries of the major investigations involving audio-visual materials, their production, utilization, and administration, was published in 1949 as a chapter in the Forty-Eighth Yearbook, Part I, of the National Society for the Study of Education (8). In this chapter Dale, Finn, and Hoban discussed the accumulated a-v researches under eight major headings and included a bibliography of 163 listings. The authors made it clear that audio-visual materials and techniques are not just so much "eye" and "ear" sense stimuli, but "they are modern technological means of providing rich, concrete experiences for students."

Students of audio-visual research will find that the National Society Yearbook gives a comprehensive analysis of research findings in instructional and theatrical motion pictures, field trips, slides and still pictures, museum materials, graphic materials, radio and recordings, and the use of a-v materials in the Armed Forces. The analysis of the instructional film includes discussion of the values of films with respect to utilization purposes (retention, motivation, factual learning, skills, habits, imagination, and so forth). Further discussion centers in the use of films with "bright" and "dull" pupils, effectiveness at various levels, frequency of showings, auditorium vs. classroom utilization, and types of verbal commentaries.

In 1950 McClusky (25) brought out the most definitive bibliography of audio-visual research and writing which has yet been seen. This bibliography listed and annotated 3115 published writings. The bibliography was arranged in eight parts: "Philosophy and Practice of Teaching with Audio-Visual Materials, Audio-Visual Teaching Materials and Their Use, Elementary Schools, Secondary Schools, Higher Education, Administration of Audio-Visual Instruction, Research on Values and Utilization of Audio-Visual Materials, and Miscellaneous," including such uses as the Armed Services, Adult Education, Rural Schools, International, Mental Hygiene, Public Libraries, and Religious Education. Students and teachers have found this book indispensable and a practical time-saver.

Also, in 1950, Hoban and Van Ormer (16) undertook to "summarize, evaluate, and integrate three decades of research" solely on the instructional film. All other aspects of audio-visual materials and techniques were dismissed from consideration, yet the bibliography in this summary of experimental instructional film studies totaled 296 for the period of 1918 to 1950. By and large, the entries in this summary represent the best in instructional-film research. The researches were closely scrutinized, then classified and discussed under these headings: "Instructional Objectives: Imparting a Knowledge of Facts," "Instructional Objectives: Teaching Perceptual - Motor Skills," "Instructional Values of Films Compared with Other Media and Methods," "Instructional Objectives: Influencing Motivation, Attitudes, and Opinions," "Audience Characteristics," and "The Rhetoric of Film Instruction: Variables in the Production and Use of Films." A few of the researches included in this summary made available by the Yale Motion Picture Research Project and the Pennsylvania State College Instructional Film Research Program had been hitherto unpublished.

In the same year, as part of an address before the Fifth Annual Audio-Visual Conference at San Diego State College, Kinder (19) speaking on the topic "Improving Classroom Instruction Through Audio-Visual Research," commented at length upon the researches of the late forties. In the main emphasis was placed on research in four areas: "(1) general gains from film utilization, (2) effectiveness of variations in presentation, (3) values of different media, and (4) variations in the structure of the media."

The above bibliographies, summaries, and collations of a-v research give a complete picture up to 1950. Since 1950 there has been no summarization or collection of any scope. Researchers can bring their audio-visual research pattern up-to-date by consulting studies sponsored by the Armed Forces at Pennsylvania State College (35), Yale University (42), and projects of the U. S. Air Forces' Human Factors Operations Research Laboratories (23), studies sponsored by Teaching Film Custodians and the Motion Picture Association (24), the Nebraska Project (29), the Hanover Institute experiments (31). and the work of numerous individual researchers. Little reference material bearing on educational television will be found in any of the sources already named. There has been, however, one recent comprehensive review. This 1953 publication by Finn (12) lists 54 significant researches in this new and rapidly expanding communications medium.

TEXTBOOKS

Most of the textbooks and supplementary books in audio-visual education make a point of mentioning much research. These books have been written for pre-service and in-service teachers in the main and their content is more or less documented by the professional research which has been done in the field. A few of these books, in the order of publication, are: Hoban (15), Dale (6), Elliott (9), McClusky (27), McKown and Roberts (28), Weaver and Bollinger (36), Kinder (20), and Wittich and Schuller (38).

JOURNALS AND NEWSLETTERS

There are ten or twelve journals which serve the audio-visual field specifically and which have regularly scheduled dates of publication. Although these journals publish a heterogeneous mass of articles dealing with convention topics, addresses, surveys, production notes, and articles of an omnibus character, they also carry serious scientific research articles. Since most of these journals are rather well-known, it will suffice merely to mention them — *Educational Screen, Audio-Visual Guide, Film News, Jewish Audio-Visual Review, Business Screen, See and Hear, Ohio Newsletter, Film World, Audio-Visual World, Journal of AERT* (Association for Education by Radio-Television), *Teaching Tools,* and *Audio-Visual Communication Review.* The last two of these magazines are so new that they are in their first years of publication. *Teaching Tools* is essentially a how-to-do-it magazine; *Audio-Visual Communication Review* is a quarterly published by the Department of Audio-Visual Instruction of the National Education Association. This journal emphasizes research and investigation.

In addition to the journals listed above, nearly all major educational magazines carry an occasional audio-visual article. A perusal of the sources of the articles used in this book of readings will give ample evidence that there is great variety. Some magazines devote a section of each issue to the a-v field, often with a specially designated staff or departmental head. Six other magazines will be singled out for specific mention — *Review of Educational Research, School and Society, Phi Delta Kappan, The Instructor, Education,* and *The Nation's Schools.*

The editorial board of the *Review of Educational Research* has a policy of rotating twelve major educational areas for inclusion in its various issues. Research in audio-visual education has, therefore, been summarized periodically. The first summary was prepared in 1942 by Kinder (21) with a chapter entitled, "Visual Aids in Education," including a bibliography of 78 items. Another chapter in the same issue by Seerley Reid and Daniel Day (32) listed 169 researches pertaining to radio and records. Appropriately enough these summaries were included in the journal's issue entitled "General Aspects of Instruction, Learning, Teaching, and the Curriculum." In 1945, the journal carried a second summary of a-v research. This one was prepared by Stenius (33) and combined both audio and visual materials and techniques. Stenius included a bibliography of 62 items. In 1950, the journal carried a specialized summary of audio-visual articles in adult education by Svenson and Sheats (34). These writers listed a bibliography of 87 items. No comprehensive summary has appeared in the *Review* since 1950.

School and Society regularly carries a column devoted to a review of educational literature. Twice W. W. Brickman (3) has reviewed the major audio-visual literature. Although this column makes no pretense of covering all the literature in the field, it does summarize and critically evaluate dozens of the more outstanding publications.

In recent years, the *Phi Delta Kappan* has annually carried a section entitled "Doctors' Dissertations Under Way in Education," compiled by Carter Good or R. L. Hunt (14). The issues of 1950, 1951, and 1952 listed respectively thirty-six, twenty-three, and twenty-seven theses in audio-visual education under way at various colleges and universities in the United States. These lists are highly informative and give insight into the types of audio-visual problems being investigated in the graduate schools around the country.

The Instructor, designed particularly for teachers of the elementary school, has for years featured audio-visual materials with a well-known educator serving as editor. Most of the articles in this journal are of a practical nature beamed directly at the classroom teacher.

Education publishes a full issue devoted to audio-visual matters about every eighteen months, and *The Nation's Schools* carries at least one article in every issue.

UNPUBLISHED BIBLIOGRAPHIES

Nearly every college and university professor offering courses in audio-visual education (especially graduate courses) has of necessity collected bibliographies and collations of research in the field. These collections have great functional value. An excellent example of these collections is the one in the files of Lee Cochran at the University of Iowa. Three graduate students at Iowa prepared these bibliographies as follows: (1) Harry M. Kaufman, *Audio-Visual Bibliography, 1940-1947;* (2) Benjamin B. Davis, *Audio-Visual Bibliography, 1948;* (3) Robert J. Hansen, *Audio-Visual Bibliography, Nov., 1947—June, 1950;* (4) Robert J. Hansen, *Audio-Visual Bibliography, June, 1950—May, 1951.* All four of these collections follow the same pattern, breaking down the researches into some forty categories. These bibliographies are extensive and include much college material not generally indexed in standard sources.

REFERENCES — Education

1. Allen, William, "Research Verifies the Value of Audio-Visual Materials," *NEA Journal,* 41:49, Jan., 1952.

2. Allen, William, "Audio-Visual Learning: A Comment on Research," *School and Society*, 78:55-57, Aug. 22, 1953.

3. Brickman, W. W., "Audio-Visual Education," *School and Society*, 67:320-26, April 24, 1948; also by same author, same journal, "Audio-Visual Learning," 77:197-203, Mar., 28, 1953.

4. Brink, Wm. G., and Jamrich, J. X., "Teaching Materials," *Review of Educational Research*, 21:214-15, June, 1951.

5. Carroll, John S., *Teacher Education and Visual Education for the Modern School*, ch. 2, 3. San Diego, Calif.: Office of Superintendent of County Schools. Education Monograph No. 16. 1948.

6. Dale, Edgar, *Audio-Visual Methods in Teaching*. N. Y.: The Dryden Press. 1946.

7. Dale, Edgar, Dunn, Fannie, Hoban, C. F., Jr., and Schneider, Etta, *Motion Pictures in Education*. N. Y.: The H. W. Wilson Co. 1937.

8. Dale, Edgar, Finn, James D., and Hoban, C. F., Jr., "Research on Audio-Visual Materials," in *Audio-Visual Materials of Instruction*, ch. 2. Forty-Eighth Yearbook, Part I, National Society for the Study of Education. Chicago: University of Chicago Press. 1949.

9. Elliott, Godfrey M. (Editor), *Film and Education*, ch. 4. N. Y.: Philosophical Library, Inc. 1948.

10. Fearing, Franklin, *Motion Pictures as a Medium of Instruction and Communication*. Berkeley: University of California Press. 1950.

11. Finn, James D., "Professionalizing the Audio-Visual Field," *Audio-Visual Communication Review*, 1:8, Winter, 1953.

12. Finn, James D., "Television and Education: A Review of Research," *Audio-Visual Communication Review*, 1:106-26, Spring, 1953.

13. Freeman, Frank N., et al, *Visual Education*. Chicago: University of Chicago Press. 1924.

14. Good, Carter V., "Doctors' Dissertations Under Way in Education, 1949-1950," *Phi Delta Kappan*, 31:268-92, Feb., 1950; also R. L. Hunt, same title, same journal, 32:263-93, Feb., 1951; same, 33:305-38, Feb., 1952.

15. Hoban, C. F., Jr., *Focus on Learning*. Washington, D. C.: American Council on Education. 1942; and *Movies That Teach*. N. Y.: The Dryden Press. 1947.

16. Hoban, C. F., Jr., and Van Ormer, E. B., *Instructional Film Research*, 1918-1950 (Rapid Mass Learning). Technical Report No. SDC 269-7-19. Port Washington, L. I., New York: Special Devices Center. (Report Distributed by U. S. Dept. of Commerce). 1950.

17. Hovland, Carl I., Lumsdaine, Arthur A., and Sheffield, Fred D., *Experiments on Mass Communication* (Studies in Social Psychology in World War II, Vol. 3). Princeton, N. J.: Princeton University Press. 1949.

18. Johnson, William M., *Fundamentals in Visual Instruction*, ch. 4. Chicago: The Educational Screen. 1927.

19. Kinder, James S., "Improving Classroom Instruction Through Audio-Visual Research," in *Audio-Visual Administration*, edited by Fred Harcleroad and William Allen, pp. 70-76. Dubuque, Ia.: Wm. C. Brown Co. 1951.

20. Kinder, James S., *Audio-Visual Materials and Techniques*. New York: American Book Co. 1950.

21. Kinder, James S., "Visual Aids in Education," *Review of Educational Research*, 12:336-44, June, 1942.

22. Kinder, James S., "Research in Audio-Visual Education," *Educational Screen*, 18:360-61, Dec., 1939.

23. Lumsdaine, A. A., "Audio-Visual Research in the U. S. Air Force," *Audio-Visual Communication Review*, 1:76-90, Spring, 1953.

24. May, Mark, *Research in Audio-Visual Education Supported by Teaching Film Custodians and the Motion Picture Association*. N. Y.: Teaching Film Custodians, Inc. Mimeographed, 34 p. 1950.

25. McClusky, F. Dean, *The A-V Bibliography*. Dubuque, Ia.: Wm. C. Brown Co. 1950.

26. McClusky, F. Dean, *Visual Instruction: Its Values and Its Needs*. N. Y.: Mancall Pub. Co. 1932.

27. McClusky, F. Dean, *Audio-Visual Teaching Techniques*. Dubuque, Ia.: Wm. C. Brown Co. 1948, 1949.

28. McKown, Harry C., and Roberts, Alvin B., *Audio-Visual Aids to Instruction*. Second Edition. N. Y:. McGraw-Hill Book Co. 1949.

29. Meierhenry, W. C., *Enriching the Curriculum Through Motion Pictures*. Lincoln, Nebr. Nebraska University Press. 1952.

30. Monroe, Walter S. (Editor), *Encyclopedia of Educational Research*, Rev. Ed., pp. 84-97. N. Y.: The Macmillan Co. 1950.

31. Norberg, Kenneth, "Perception Research and Audio-Visual Education," *Audio-Visual Communication Review*, 1:18-29, Winter, 1953.

32. Reid, Seerley, and Day, Daniel, "Radio and Records in Education," *Review of Educational Research*, 12:305-22, June, 1942.

33. Stenius, Arthur, "Auditory and Visual Education," *Review of Educational Research*, 15:243-55, June, 1945.

34. Svenson, Elvin V., and Sheats, Paul H., "Audio-Visual Aids in Adult Education," *Review of Educational Research*, 20:216-23, June, 1950.

35. "Technical Reports of the Instructional Film Research Program," SDC 269-7, Nos. 1-18, and various "Incidental and Progress Reports." State College, Pa.: Pennsylvania State College. 1949-1953. See also Hoban and Van Ormer above.

36. Weaver, Gilbert G., and Bollinger, Elroy W., *Visual Aids: Their Construction and Use.* N. Y.: D. Van Nostrand Co., Inc. 1949.

37. Wittich, Walter A., "Needed Research in Audio-Visual Methods," *Audio-Visual Communication Review,* 1:99-105, Spring, 1953.

38. Wittich, Walter A., and Schuller, Charles F., *Audio-Visual Methods: Their Nature and Use.* N. Y.: Harper and Bros. 1953.

39. Weber, J. J., "Bibliography on the Use of Visual Aids in Instruction," *Educational Screen,* vol. 9, nos. 1, 2, 3, 4, 5, 6. 1930.

40. Weinman, Constance, *Bibliography on Audio-Visual Materials for Teachers in the Elementary School.* N. Y.: Bureau of Publications, Teachers College, Columbia University. 1950.

41. Wood, Ben D., and Freeman, Frank N., *Motion Pictures in the Classroom,* pp. 205-29. Boston: Houghton Mifflin Co. 1929.

42. Yale Motion Picture Research Project Staff, "Do 'Motivation' and 'Participation' Questions Increase Learning?" *Educational Screen,* 26:256 ff., 1947.

BIBLIOGRAPHIES AND RESEARCH IN RELATED FIELDS

A vast amount of research on audio-visual materials as communications media is appearing in areas related to teaching and education; areas such as communications, psychology, semantics, propaganda techniques, journalism, business administration, and advertising. The journals catering to these areas carry articles and bibliographies in nearly every issue, and some of the textbooks devote chapters to values, sources, and utilization of a-v materials. It is impossible in this brief chapter to bring into full review the fascinating picture of a-v research in these areas. Its broad sweep, however, may be glimpsed by citing a representative array of sources. The interested student may very well begin with these major sources and work down to the sharp focus of specifics.

REFERENCES — RELATED FIELDS

1. *Adult Education.* Journal of Adult Education Association, 19-27 N. Jackson Street, Danville, Illinois.

2. Anderson, Harold A., *The Teaching of Listening: A Bibliography.* Columbus, Ohio. Teaching Aids Laboratory, Ohio State University. Mimeo. April, 1950. Pp. 10.

3. *Audio-Visual Education,* in International and Human Relations, Institute of Adult Education. New York: Bureau of Publications, Teachers College, Columbia University. 1950.

4. Beck, L. F., "A Review of 16-Millimeter Films in Psychology and Allied Sciences," *Psychological Bulletin,* 35:127-67, 1938; also, "A Second Review of 16-Millimeter Films in Psychology and Allied Sciences," same source, 39:28-67, 1942.

5. Berelson, Bernard, and Janowitz, Morris, *Reader in Public Opinion and Communication.* Glencoe, Ill.: Free Press. 1950.

6. Buckler, J. Bruce, "The Film Trains Industrial Workers," in *Film and Education,* edited by Elliott, Godfrey, pp. 281-95. New York: Philosophical Library. 1948.

7. Burch, Glen, "Films for Film Forums and Adult Groups," in *Film and Education,* edited by Elliott, Godfrey, pp. 269-80. New York: Philosophical Library. 1948.

8. Chase, Stuart, *The Tyranny of Words.* New York: Harcourt, Brace and Co. 1939.

9. Chase, Stuart, *The Proper Study of Mankind.* New York: Harper and Brothers, 1948.

10. *Clearing House* (journal). Inor Publishing Co., 207 Fourth Avenue, New York, N. Y.

11. *Communication Research.* Bureau of Applied Social Research, 427 W. 117th Street, New York, N. Y.

12. De Boer, John J. (Chairman), *Education and the Mass Media of Communication.* Research Bulletin of the National Conference on Research in English. Chicago: National Conference of English Teachers. 1950.

13. De Boer, John J., *et al, Teaching Secondary English.* New York: McGraw-Hill Book Company. 1951.

14. Doob, Leonard, *Propaganda and Public Opinion.* New York: Henry Holt and Co. 1948.

15. *English Language Arts.* Committee on the English Curriculum of the National Council of Teachers of English. New York: D. Appleton-Century-Crofts. 1952.

16. Estrich, Robert M. and Sperber, Hans, *Three Keys to Language.* New York: Rinehart and Co. 1952.

17. Fuerst, B. V., *Film Guide for Improving Office Practice.* New York: Film Research Associates. 1950.

18. Haas, Kenneth B., "The Film in Training Sales Personnel," in *Film and Education* edited by Elliott, Godfrey, pp. 297-311. New York: Philosophical Library. 1948.

19. Hayakawa, S. I., *Language in Action.* New York: Harcourt, Brace and Co. 1939.

20. Heath, Harry, *Bibliography of Films and Filmstrips for Teachers of Journalism:* Annotated. Mimeo. Ames, Ia.: Department of Technical Journalism, Iowa State College. 1952.

21. Horn, Ernest, "Language and Meaning," in *The Psychology of Learning*, Part II, Forty-First Year-book. Chicago: National Society for the Study of Education, 1942. Pp. 377-413.

22. *Journalism Quarterly*. Journal for the Association for Education in Journalism, Emory University, Georgia.

23. Klapper, Joseph T., *The Effects of Mass Media*. New York: Bureau of Applied Social Research, Columbia University. 1950.

24. Lazarsfeld, Paul F., "The Effects of Radio on Public Opinion," in *Print, Radio, and Film in a Democracy*, edited by Douglas Waples, pp. 66-78. Chicago: University of Chicago Press. 1942.

25. Lee, Alfred M., *How to Understand Propaganda*. New York: Rinehart and Co. 1952.

26. Lee, Irving J., *The Language of Wisdom and Folly: Background Readings in Semantics*. New York: Haynes and Brothers. 1949. Pp. 357.

27. Myers, Kurtz, *The Library and Audio-Visual Materials: A Bibliography*. Detroit: Audio-Visual Materials Consultation Bureau, Wayne University. 1949. Pp. 24.

28. Ogden, C. K., and Richards, I. A., *The Meaning of Meaning*. New York: Harcourt, Brace and Co. 1938.

29. *Press, Film, and Radio*. Four volumes. Paris: United Nations Educational, Scientific and Cultural Organization (distributed in the United States by Columbia University Press). 1948-1951.

30. *Psychological Abstracts*. American Psychological Association, Inc., Lancaster, Pa.

31. *Psychological Bulletin*. Same as above.

32. *Psychological Cinema Register*. State College, Pa.: Pennsylvania State College. 1952.

33. Schram, Wilbur, "The Effects of Mass Communication: A Review," *Journalism Quarterly*, 26:397-409, Dec., 1949.

34. Siepman, Charles A., *Radio, Television, and Society*. New York: Oxford Univ. Press. 1950.

35. Slesinger, Donald, "The Film and Public Opinion," in *Print, Radio, and Film in a Democracy*, edited by Waples, Douglas, pp. 79-98. Chicago: University of Chicago Press. 1942.

36. Still, Alfred, *Communication Through the Ages: From Sign Language to Television*. New York: Privately printed. 1946.

37. Svenson, Elvin V., and Sheats, Paul H., "Audio-Visual Aids in Adult Education," *Review of Educational Research*, 20:216-23, June, 1950.

38. Walpole, Hugh R., *Semantics: The Nature of Words and Their Meaning*. New York: W. W. Norton and Co. 1941.

39. Waples, Douglas (Editor), *Print, Radio, and Film in a Democracy*. Chicago: University of Chicago Press. 1942.

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To show the nature of some of the research summarizations, the editors include three recent articles in full. Allen (1, p. 328) has selected some of the commoner questions raised in connection with audio-visual utilization. Wittich (37) points to some of the problems and opportunities in this field in an article marked by its specificity. Finn (12) has charted an a-v area which is new and which is growing rapidly. He has a bibliography of 54 items. The editor of "Audio-Visual Communication Review" has this to say about Finn's article, "To the knowledge of the editor, this is the first comprehensive review of educational television research to be published . . . [This article] should greatly aid the educator in understanding the unique contributions of educational television."

Is a picture worth 1000 words? Do films change people's attitudes? How should audio-visual materials be used? These are some questions that teachers ask.

There are many unanswered questions, but available research studies lead us to several conclusions which are briefly discussed in this article.

Research Verifies the Value of Audio-Visual Materials

By
WILLIAM ALLEN

VALUES

Audio-visual materials have value. Research shows conclusively that audio-visual materials are helpful to the teacher. These materials are interesting to students, make verbal concepts meaningful, are retained and recalled, stimulate student activity, and provide experiences that can be brought into the classroom in no other way?

Audio-visual materials will not replace the teacher. In the hands of a good teacher these materials can greatly aid learning. Some studies show that they can be used to present information effectively so that the teacher is given more time for creative and guidance aspects of developing good learning situations. The teacher, of course, has a responsibility to learn to use all instructional materials skilfully.

Both bright and dull pupils learn from audio-visual materials. You can be assured that audio-visual materials will be effective with all levels of intellectual ability. The amount learned, however, is usually directly related to the intelligence of the pupil. The more a pupil knows about a subject, the more he can learn from instructional material on the subject. The effect of audio-visual materials is particularly *noticeable* with dull pupils, because they re-

spond to this kind of stimulation altho they may fail to profit much from books and other verbal materials.

Audio-visual materials are interesting. If it is true that pupils learn better from materials in which they are interested, it is then clear that audio-visual materials have an immediate advantage over less stimulating materials. The teacher can use this interest to enrich teaching and to lead the class to greater learning.

Audio-visual materials influence the attitudes of children. Probably the two most effective audio-visual materials for changing attitudes are the theatrical motion picture and the entertainment radio. However, most attitudes have been many years in forming and are well established; a short film or radio program cannot be expected to make great changes.

There is some evidence that audio-visual materials are most effective in changing attitudes when they attempt to *redirect* existing beliefs and drives, not oppose them directly. The research suggests to the teacher that the changing of attitudes is a long-term affair and must be carried on with a variety of technics.

METHODS

Studies with regard to methods of using audio-visual materials indicate that in general the following conclusions are justified:

The use of a variety of teaching materials will lead to greater learning. Research shows clearly that children learn best when they receive a double exposure of instructional materials and technics. For example, much more is learned in a particular subject when both films and books are used as tools for teaching than when only one type of teaching material is used. The teacher must know the advantages and disadvantages of each kind of instructional material so the right tool can be used at the right time.

There is some evidence that films are excellent for the initiating of a study, that many kinds of materials should be used during the developing of the unit, and that student-produced materials are effective as summaries or conclusions. There is no *one* best kind of instructional material for *all* teaching situations.

Introductions to films by the teacher and other types of class preparation increase learning from films. When the teacher prepares the class for the film by asking questions to be answered, reviewing difficult words from the film, and using a study guide in anticipation of the film, pupils learn a great deal more from the film than when no such preparation is made.

Showing the film a second time will increase the learning. Almost as effective as class preparation is the showing of the film a second time. This technic utilizes the learning principles of practice and repetition.

Student participation increases learning with audio-visual materials. When the pupil can relate himself to the subject being presented and can participate during or after the presentation of the material, he will learn more. This fact has been demonstrated in research with films, filmstrips, and still pictures. It is, therefore, best to use audio-visual materials in an active way—not limit them to passive audience situations.

Audio-visual materials should usually be used in class rather than in the auditorium. The classroom, not the auditorium, is the normal teaching environment, and research shows that audio-visual materials can be more effectively taught when they are used as a part of classroom instruction. When pupils are taken to the auditorium for a film, they usually treat the showing as entertainment. However, in some circumstances it is desirable to use audio-visual materials to reach large groups of pupils quickly and effectively.

A NEW DYNAMIC

We still have many unanswered problems. We have a great deal to learn about the ways of producing and using instructional materials and are challenging our own findings daily. It is clear, however, that audio-visual materials have brought a new dynamic to classroom instruction and that research is verifying the great influence of audio-visual materials on educational method.

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The period of 1920 to 1930 was the decade during which the silent motion picture film came to the attention of educators. It was during this period that educators sought to measure the effectiveness of this new medium of communication in terms of learning outcomes in the areas of general science, geography and history (2).

Needed Research in Audio-Visual Methods

By
WALTER A. WITTICH

While the audio-visual experimental investigators of the 1920's acknowledged that the teaching materials with which they worked were new and often experimental in nature, certain positive conclusions were established:

1. Children using films in instruction learned increasing amounts of information.

2. Film-learned information was retained over a longer period of time.

3. Teachers reported that film use resulted in heightened interests, greater enthusiasm for school activities, and more pupil-initiated supplementary reading.

Between 1930 and 1935 sound was effectively added to the old silent motion picture format. A new teaching material became available for limited areas of classroom use. The experimenter of this period was careful to acknowledge that only limited materials existed, and in some instances specifically prepared 16 mm sound motion picture films were created for the use of the experimenter as he sought to enrich classroom learning situations (4).

The sound motion picture film offered new possibilities for the improvement of classroom learning situations. A new cycle of educational film research, particularly in the field of experience enrichment, was begun. Investigators such as Frances Consitt, V. C. Arnspiger, C. C. Clark, Phillip Rulon, William Westfall, Harry Wise, John Elmore Hansen, and others planned and executed researches which dealt with the sound motion picture film in its relation to information learning and to developmental thinking.

In general the research during the 1930's was undertaken in an effort to answer such questions as these:

1. Has the educational sound motion picture film proved a useful supplementary teaching material thru which to provide readiness for learning?
2. Can traditional subject content be effectively learned thru sound motion picture means?
3. Is information learned thru educational sound motion picture films retained as effectively as when learned thru traditional verbal methods of classroom instruction?
4. Do 16 mm sound motion picture films prove as effective with learners of low ability as with learners of high ability?
5. Does the use of carefully selected 16 mm sound motion picture materials affect reading performance in a positive manner?

Anyone willing to analyze the researches of this period will find that affirmative answers have been brought forth particularly in the case of 1, 2, 3, and 5 above.

The war years of the beginning 1940's curtailed research of a specific classroom pattern. Investigations of the kind necessary to determine the use of film materials in mass training operations quite naturally were taken up within the Armed Forces. For the best information about this type of research, see Hoban (3) and Carpenter (1). This paper concerns itself primarily with research pertaining to the film in public education.

Due in no small part to the impetus which has been gained thru the attention given audio-visual methods during World War II and to the steady scrutiny being given educational procedures in the public schools of the nation, it is to be expected that planned educational sound motion picture film research would be resumed in university and college centers of audio-visual education following 1945.

Contemporary Current Research Trends

Following World War II, school administrators once again turned serious attention to scrutinizing the role of audio-visual technics in the improvement of instruction. Growing naturally out of such interest, research studies carried on in audio-visual technics of three general types were resumed:

1. Surveys into the status of audio-visual programs in selected cities, counties, and states.
2. Historical and philosophical studies leading to proposed optimum plans and procedures for instituting new programs of audio-visual education for cities, counties or states.
3. A continuation of investigations into the utilization and learning outcomes of audio-visual methods and materials.

The writer, with the assistance of a graduate seminar group, sought to investigate the trend in contemporary research during the 1950-51 school year as evidenced by graduate degrees granted in the field of audio-visual education and specialization. The directors of major audio-visual departments in colleges and universities were invited to submit the titles of Master's degree and Ph.D. dissertations accepted or pending during the 1950-51 term. Completed theses were secured for reading and study.

Twenty-eight theses were studied. These covered the areas of audio-visual administrative organization, teacher-training practices, and utilization, and were completed in institutions of higher learning from coast-to-coast. Eleven of these theses sought to examine the status of state and local audio-visual programs in terms of professional training of personnel, budget, and the possible interests of teacher-training agencies in the field of audio-visual education.

Seventeen of the studies were investigations into the role of audio-visual materials and technics in the improvement of specific subject-matter areas. Fortunately, in my opinion, the researches undertaken in this area exceed the number undertaken in the first area. The nature of utilization research seems to be becoming more objective and more carefully defined. Technic problems such as the role of the tape in teaching speech, the use of films in teaching chemistry, the use of slides in instruction in football are examples of such carefully delimited and tightly structured investigations.

The Present Status of Audio-Visual Research

Audio-visual education as a concept of effective teaching method is a comparatively young area of professional education. If we were to draw up a list of efficiently planned and accomplished professional research studies in the field of audio-visual education and compare it with the research literature currently available in the fields of reading, social studies, language arts, arithmetic, etc., we would see at a glance that audio-visual research is by comparison very "sketchy."

It is true that in the short space of 25 years great strides have been made in audio-visual education. Because of this, our responsibilities today must be to accelerate the pace of audio-visual research, not in the direction of establishing audio-visual education as a professional education area *per se* but in the direction of investigating and establishing the role of audio-visual materials as they effectively assist in the implementation of specific goals in general education. I know of no comprehensive or definitive research, for example, in the area of social attitudes and audio-visual methods. We have pitifully little to report to reading specialists about the role of audio-visual materials in vocabulary development, reading comprehension, or reading rate. I cannot cite a single study in the area of arithmetic readiness or skill accomplishment. Though we make films and filmstrips in that area, we have not, to my knowledge, tested them in a way convincing to the scrutiny of the professionally trained mathematics methods person.

Our ranks are filled with competent school people, certain and sure thru their own observation that audio-visual methods work and are effective. However, when I attempt to draw together tangible evidence to support an argument for the use of audio-visual materials in specific subject areas: primary language arts, intermediate-grade social studies, junior high school mathematics, or high school science, I must admit I can find at best one, two, and in a few instances three "solid" investigations, and these usually older than ten years.

Our greatest necessity is to conduct searching, validly structured researches in the role of audio-visual materials as they may effectively accomplish long recognized objectives in the traditional subject areas with which our schools are so concerned:

Arithmetic
Art
Biology
Chemistry
Civics and Citizenship
Commercial Subjects
Conversation
English and Language Arts
Foreign Languages
General Science
Geography and Geology
Guidance
History, Economics, Social Problems, and Democracy
Home Economics
Industrial Arts
Mathematics
Music
Natural Science
Physical Education
Physics
Physiology, Health, and Nursing
Phychology and Teaching
Reading Readiness
Safety
Social Studies

As I counsel with graduate students, I advise them to coordinate their investigations into audio-visual methods with their subject interests. The possibilities for study are almost limitless. No field of education enjoys the luxury of contemplating the entire field of education for its studies. One may become intrigued with the possibilities; here are a few:

Primary Level

1. What is the effect of a given group of educational sound films, properly used among beginning first-grade children, on the establishment of reading readiness?
2. What is the effect of selected educational sound films among second-grade children as measured in terms of creative thinking developed both orally and in writing, and in terms of interest in observation and reporting?
3. What is the extent to which selected educational sound films bring about desirable concepts among third-grade children pertinent to the understanding of a global society?
4. How does film experience affect the facilities of young learners? in the area of oral expression? in creating experience charts? in written expression? in general conversation patterns? in art expression?

Intermediate Level

1. Can the arithmetic processes be more meaningfully taught by filmic demonstration involving animation?
2. What is the role of carefully selected sound motion picture films in the inciting of interest in expressing oneself orally? in writing? What effect, if any, would be noted in changes in quality or speed of handwriting?
3. What is the role of the 16 mm sound film in helping to establish acceptable attitudes of one worldness toward "foreign" cultural groups?
4. What does the realism of filmic portrayal accomplish in meeting socially useful and desirable social studies goals?
5. Can the 16 mm sound film provide learning readiness experiences (so easily accomplished in the primary grades) in anticipating reading accomplishment in the intermediate grades?
6. Can creativeness in art expression be effectively influened thru the use of carefully selected 16 mm sound films?

JUNIOR HIGH SCHOOL

1. What is the extent to which selected educational sound films influence thinking and behavior among seventh-grade pupils, particularly in terms of tolerance, inter-group relationships, etc.?

2. To what extent are permanent gains in music appreciation achieved thru the use of selected educational sound films at the junior high school level?

3. To what extent do selected educational sound films influence health attitudes and habits more or less than do traditional methods of teaching in ninth-grade physiology study?

4. To what extent are the formation of socially desirable, global social attitudes achieved as the result of using selected educational sound films and traditional teaching methods among seventh and eighth-grade students?

SENIOR HIGH SCHOOL LEVEL

1. What is the effect of selected educational sound films on the vocabulary, oral and written expression development of tenth-grade English pupils?

2. To what extent is retention and assimilation of facts and concepts in botany, chemistry, and physics assisted or impeded when motivated by selected educational sound films as a supplement to traditional classroom methods?

3. To what extent does the use of selected educational sound films reflect rapidity of learning, work technics, and work output in senior high school shop classes?

4. How are attitudes toward war and peace influenced thru the use of films in problems of democracy classes?

5. What is the effectiveness of selected educational sound films among twelfth-grade government or economics pupils?

The above are a very few of the important and highly fascinating opportunities of study which we must undertake in the present and immediate future. How fortunate the researcher in audio-visual education to be confronted with such a vista!

THE CHALLENGE

The great opportunity for the professional worker is not in the direction of establishing himself as a separate entity; rather, his is the fortunate role of being indispensable to the subjectmatter specialist. To improve instruction; to enrich existing learning environments; to help learners to understand clearly and lastingly; to record the world environment to the learner thru the vividness, reality, and plausibility which the 16 mm sound film can accomplish—

that is the goal and the opportunity and the reward of the professional researcher in audio-visual education.

REFERENCES

1. Carpenter, C. R. A Theoretical Orientation for Instructional Film Research. *Audio-Visual Communication Review*, 1953. I, P. 38-52

2. Hoban, C. F., Jr. *Movies That Teach*. New York: Dryden Press, 1946.

3. Rulon, P. J. *The Sound Motion Picture in Science Teaching*. Cambridge, Mass.: Harvard University Press, 1933.

4. Wood, B. D. and Freeman, F. N. *Motion Pictures in the Classroom, An Experiment to Measure the Value of Motion Pictures As Supplementary Aids in Regular Classroom Instruction*. Boston: Houghton Mifflin, 1929.

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Television is the product of research. Until this decade, however, almost all research activity was confined exclusively to the scientific and technological problems necessary to the development of the medium itself. Little work was done with the educational and sociological problems which were to develop with the widespread introduction of television as a mass medium of communication in American life.

Television and Education: A Review of Research[1]

By
JAMES D. FINN

Two bibliographies appearing in the late 1940's, those of Rose (31) and Broderick (4), carry no reference to research in the educational, psychological or sociological problems related to television. There is no doubt that some investigations of the medium in terms of potential audiences, effects on other media, etc. were being carried on by advertising agencies, advertising departments of corporations, radio networks, and possibly other affected industries. This type of investigation, however, is treated within the industry as a major trade secret and is generally not published.

As the mid-century mark neared, sociologists, educators, psychologists and others began to exhibit interest in the effects and offerings of television. By 1953 a substantial number of studies had appeared as evidenced, for example, by the reviews of Fearing and Rogge (11), and of Witty (50). This research literature appears to be growing in quality and amount each year.

An analysis of the existing literature of interest to educators shows that it can be divided into at least four major categories: (a) studies of the general effects of television as it functions in the lives of children and adults, (b) content analyses, (c) studies of the educational effects of television, and (d) studies of technical problems associated with the use of television in schools and similar situations. The following discussion will follow these four categories of television research.

STUDIES OF THE GENERAL SOCIAL EFFECTS OF TELEVISION

Parents, educators and students of the social sciences have been concerned with the effect television has on family life, school attendance, study habits, health, leisure-time activities and other facets of social living. There also has been some concern on the part of commercial research organizations with the social nature and habits of the television audience, as these facts are of great importance in the planning of advertising campaigns, etc. From the point of view of education, the studies embracing the general social effects of television may be broken down into at least three sub-divisions: (a) studies of the nature and composition of the TV audience, (b) studies of the effects of television on leisure-time and other social activities, and (c) studies of the effects of television on children and on education.

Studies of Nature of the Television Audience

Coffin (7) made one of the earliest studies of the television audience reported in the literature. While most of his attention was devoted to the effect of television on the other social activities of the family, the composition of his sample was indicative of the nature of the television audience in May 1948, on the eastern seaboard. At that time the majority of the set owners were in the upper middle class group with practically no owners in groups below the middle class level.

Riley and associates (28), reporting in 1949 on a continuing study conducted cooperatively by Rutgers University and the Columbia Broadcasting System in a special test city of 35,000 population, noted that the composition of the television audience was changing. By mid-1948 an increasing trend of set purchasing among the lower economic group was observed.

In view of the fact that education is highly correlated with economic status, it was reported that a growing percentage of the audience consisted of those whose education had not exceeded elementary school.

McDonagh and associates (24), in 1950, after studying a representative California community, reported that television ownership was not related to age or educational status. The only differentiation noted was that larger families were more likely to own a set. It is interesting that these findings have been confirmed by a study in England. Silvey (37) found that more than half of the television sets in Britain were owned by members of the lower middle or working classes. He also observed that larger families in England were more likely to own a television receiver.

Maccoby (23) observed a tendency for set ownership to be concentrated in the middle income groups in Cambridge, Massachusetts, but the difference between middle and lower income groups was not very great. The professional group in Cambridge had the lowest percentage of set ownership and this was related to statements made by members of this group that they did not entirely approve of television.

The most thorough study on the nature of the groups owning television sets was reported by Swanson and Jones (43). The investigators developed a panel design using census block statistics. In addition to studying the economic and education levels of owners and non-owners, the investigators used a disguised intelligence test and a current affairs test. In reporting the results, Swanson and Jones say, "Neither years of education nor estimated intelligence level . . . revealed any owner vs. non-owner differences in means. The data do indicate, however, that television owners are significantly more *variable* than non-owners on the intelligence measure beyond the 2 percent confidence level. Television set owners thus represent a more heterogeneous group intellectually than non-owners" (43:354).

The data presented by the studies reported above and, to some degree in studies considered in other categories, seem to justify the following conclusions:

1. While television, early in its introductory phases, represented a luxury to be afforded by groups that had the economic means to purchase sets, this situation no longer holds true.

2. As with the introduction of other mechanical devices into American life, an immediate tendency is set up to spread the advantages of television throughout all levels of society. Television is fast becoming a general necessity.

3. All groups of Americans can be reached in equal amount through television broadcasts if set owning is the criterion of availability.

Studies of the Effect of Television on Leisure-Time and Other Social Activities

As noted in the preceding section, Coffin (7) was one of the pioneer investigators who inquired into the effect of television on social activities. He examined the patterns of leisure-time activities in 137 television and 137 non-television families matched as to socio-economic levels. The whole sample totaled about a thousand persons.

Coffin found a definite reduction in motion picture attendance on the part of the television families in his sample. Approximately 60 percent of the television families went to the movies less than they did previously. Even after the novelty factor was assumed to have disappeared (one year), low attendance still prevailed. A decline in attendance at all other forms of entertainment outside the home was also reported. Within the home, daytime radio listening declined 26 percent while night time listening declined 68 percent. Some dropping off in reading also was reported, although this was not as great (18 percent) as with other forms of leisure-time activities. Finally, 24 hours a week represented the average use of television sets by the families in the sample. In general, Coffin also found these viewers to be enthusiastic about television, preferring even the television commercials to the radio commercials.

A decrease in most of the common leisure-time activities carried on by families was noted by Riley and associates (28) in their sample of 278 television homes as compared with 278 non-television homes. Families in television homes listened to the radio less, attended less motion pictures, read slightly less, etc. Only in sports attendance and sports participation did the two groups appear to be equal. The investigators noted no appreciable difference between families owning a set six months in these respects. However, the results reported by Lewis (21) as described in the next section would seem to show that the novelty factor takes longer to wear off than had been supposed.

Riley and associates also reported some other findings of interest. They found some differences in viewing behavior among various educational levels, with those persons who terminated their education in the elementary school viewing television somewhat less and listening to the radio somewhat more after six months of set ownership. Other differences were noted in motion picture attendance, but these were not great. Children were found, as in the studies reported in the next section, to be viewing television over two hours each night and listening to the radio much less. Fifty-eight percent of the owners who had sets less than six months reported that television had brought new interests to the family while 74 percent of the owners who had sets over six months reported the same.

In the Southern California community investigated by McDonagh and associates (24), the same pattern of decrease in leisure-time activities among television owning families was observed. The authors reported that outside visiting, pleasure driving, reading, active sports, motion picture attendance and intra-family conversation suffered decreases ranging from slight to considerable. Home entertaining was increased.

Again, the effect of television seems to cross international boundaries. Silvy (37) reported less radio listening in Britain among set owners. This erosion of the radio audience occurred only during times of television transmission. (British television does not broadcast for the great length of time each day that American television is on the air.) He reported little slackening of "going out" among television families— a difference which may be due to cultural patterns. Silvey noted the novelty effect of television wearing off in England after one year—a fact not reported in American studies. As in the study by Riley and associates on American viewing patterns, English televiewers vary with education and socio-economic status as to to the amount of viewing.

Swanson and Jones (43), in their carefully controlled study of the characteristics and habits of the Minneapolis television audience, reported a percentage loss on each of several other leisure-time activities when a television set was in the home. Motion picture attendance, radio listening, books read, newspaper reading time, and magazine reading all suffered. However, the investigators applied two statistical tests to the differences and reported that only radio listening and motion picture attendance were significantly lower. Finally, television set owners tended to know less about current government affairs.

A recent unpublished study by a psychological consulting firm in Los Angeles tends to throw doubt upon the conclusions advanced in several of the studies with respect to the long term effect of television upon motion picture attendance (17). A staff of trained psychologists interviewed a representative sample of movie-goers as they left Los Angeles theaters. Of this group, 37 percent owned television sets and 63 percent did not. The distribution of the rate of motion picture attendance (once a week, etc.) was approximately the same between the two groups. More important, the entire sample agreed, with a percentage ratio of approximately 80 percent to 20 percent, that they preferred to watch a feature motion picture in the theater.

The psychologists doing the research then set up a series of depth interviews to determine why people

who own television sets attend theaters. It is fairly evident that the reason people enjoy films is that they can project themselves into the dramatic situation. Three conditions seem to give the theater an advantage over television in this respect: (a) size of screen with its more lifelike appearance, (b) the greater continuity of a screen feature presentation uninterrupted by commercials and announcements which prevent empathy from occurring, and (c) the surroundings presented in a theater which offer no distractions in viewing as compared to a partially illuminated living room, voices of other people, etc. which are present in most home television situations. It may be that the leveling-off effect reported by Lewis in the study described below may have been operating in the case of those television viewers who are attending motion pictures regularly. Some form of choice and discrimination seems to be present.

The data in these and other studies reported in the next section seem to justify the following generalizations:

1. Television in the home definitely has an effect on all the other leisure-time activities carried on by the family.

2. Most investigators agree that radio listening, motion picture attendance, reading, and "going out" are decreased when a family owns a television set.

3. The evidence with respect to the so-called novelty effect is not clear. There is some reason to believe that the initial effect of television on leisure-time activities may be modified, but not erased, as the set remains in the home over a period of time. However, the duration of the novelty effect is longer than most investigators had suspected.

Studies of the Effect of Television on Children and Education

In the past two years several investigations have been reported which have inquired into the television on the behavior and habits of children. These studies are of particular interest to parents and educators. McGinnis (25), in one of the earlier studies, reported on a survey of 2182 pupils in the elementary grades of the Perth Amboy, New Jersey, public schools. Children in the lower grades were quizzed as to their preferences among comics, books, motion pictures, radio and television. Children in the upper grades were questioned further and were asked to indicate time spent with each of the media. Of the 2182 pupils, 60 percent listed television as their favorite, with books (18 percent), motion pictures (12 percent), radio (6 percent) and comics (4 percent) following. The statements of viewing time for television were not considered too reliable, but the investigator estimated that the pupils watched television between 15 and 25 hours per week.

Witty (48, 49, 51, 53) has reported in several journals on two studies he conducted and on several related studies. The two studies conducted by Witty embraced both elementary and secondary pupils. He used a sample of 2100 elementary school students in April and May of 1950 and 200 high school students in December of the same year.

In Witty's sample of 2100 elementary school students, 43 percent had television sets in their homes and these children spent about three hours daily in viewing. Even children in non-television homes reported average viewing times of over one hour per day. Radio listening and motion picture attendance had dropped off substantially as in the previously reported studies.

Witty investigated the relationship of television viewing and school achievement. He reported that 67 percent of the children felt that television did not help them in their schoolwork while about 30 percent believed that it did. "The relationship between intelligence and amount of televiewing was ascertained by correlating the hours devoted weekly to television by pupils in grades 3 to 7 with their IQ's. The size of the coefficients was insignificant in every grade. There was also very little correlation between educational test results and amount of televiewing. Excessive televiewing, however, seemed to be associated with somewhat lower academic attainment" (51:1).

In the same study, Witty obtained replies from 1700 parents, 55 percent reporting that they approved children's programs, while another 25 percent endorsed certain programs only. Parents who disapproved of television mentioned the sensational nature of many programs, the decrease in children's reading, etc. Teachers of the same children had a much higher rate of disapproval. Forty-eight percent of the teachers expressed dissatisfaction with television while another 25 percent recognized limitations but felt that the medium had potential value. Some values reported included the ability of television to expand experiences of children and to introduce new interests.

Witty cites several surveys of the same type applied at the secondary level. These include studies by Young (54), Gould (15), Lewis (46), Rutter (32), Carlson (5), and a survey made in the high school at Roselle, New Jersey (44). In general these studies show that students in the junior and senior high school spend from 14 to 27 hours per week at their television sets. There is some evidence that this figure tends to drop with length of set ownership and as the students grow older, but the lowest figure reported is 13.48 hours per week. (See also the study reported next for further information on this problem.) Some of these investigations also tried

to relate television viewing habits to school achievement, but the evidence is conflicting on this point. This fact was noted by Cain (45).

Finally, Witty studied the television habits and opinions of students in an Illinois high school and obtained approximately the same results as reported in other studies. Sixty-four percent of his cross section sample (200 students evenly distributed in the four years of high school) reported in 1950 that they had sets in their homes. Viewing time was about 15 hours per week with most viewing done between 7 and 10 p.m. Most of the viewing schedules of students were set up without help from parents or teachers. Thirty percent of the owners felt that television helped them in their schoolwork. Television had about the same effect on radio listening and movie attendance as reported in other studies. Thirty-four percent of the set owners reported that they read less than before owning the set.

Lewis (19, 20, 21) has written several reports on a continuing investigation of television and its effects on high school students in the South Shore High School Community in Chicago. These studies have been reported to the advertising industry by Bradway (2, 3). Lewis believes that a viewing cycle has been traced to completion.

Lewis cites evidence that, over a period of two years, semi-annual checks revealed a decline in the average number of hours per week spent in viewing as the number of set owners increased. His lowest reported figure is 16.25 hours per week. He also found that sets that had been in homes for four years showed a leveling off of viewing on the part of teenagers beginning with 17.24 hours per week the first year and ending with 13.48 hours the fourth year. This 13½ hour viewing rate was corroborated by other findings in the same system. Students felt that they could not view television more than 15 hours per week and keep a "good" scholastic rating. "A study completed in June 1951, dealt with the Primary Mental Abilities profiles (intelligence test) of student televiewers. One phase of this investigation compared the abilities areas with the weekly viewing averages . . . students with weekly viewing totals in the 11-15 hour group were also identified with the peak point in the rating profile. Where viewing totals increased beyond this level, students were found to be, on the average, less proficient in the areas of word fluency, verbal-meaning, reasoning, memory, and space" (21:119).

Lewis also showed that there were sex and maturity factors involved in televiewing. An extensive survey of students ranging from nine years of age to 18 shows, first of all, that viewing decreases with maturity ranging from approximately 23.5 hours at

age nine to 13.75 hours at age 18. For girls, this figure progressively drops off, while for boys there is an upsurge at about the eleventh year which Lewis accounts for by the boys' growing interest in spectator sports.

Lewis also reported (as did Witty) on favorite television programs of high school students, noting some differences between boys and girls, particularly in the earlier years. As they become older, their choices become more alike. Finally, Lewis examined the effect television had on the practices of high school students in doing homework and making other adjustments in the home. Sixty-nine percent reported that they did their homework before viewing television. Various other patterns made up the balance including 2 percent who said they did homework *while watching television*. Some interesting technics, similar to those developed for doing homework with the radio on, were reported.

Clarke and his associates (6) conducted a study under the auspices of Xavier University attempting to determine the effect of television on the school achievement of children and whether or not parental control of viewing affects school achievement. This study also was reported by Dunham (8). Two samples were used—544 sixth grade students from the Cincinnati public schools and 454 seventh grade students from the parochial schools. Set owners in each case were matched with non-owners on the basis of intelligence. Achievement was determined by the scores on a battery of standardized achievement tests.

Clarke concluded that no measurable effect of television could be ascertained in the study. The non-owners and owners rated approximately the same on all measures of achievement with differences not being significant. Furthermore, there was no evidence that parental control of viewing had an effect on school achievement. Those children whose viewing was uncontrolled did just as well as those children whose viewing was controlled. The investigators cautioned, however, that "poorer television habits and lower IQ's and low parental control and low achievement tend to be found in the same child" (6:7). (Statistical significance was not established.)

The Xavier study also shed some light on viewing practices. Children in the sample reported that they viewed television on the average of 3.7 hours per day during the school week and 5.5 on weekends. This makes the total viewing time about 30 hours per week. An amazingly high percentage— 52.6 percent—of the children reported that their parents exerted no control on their viewing. Program favorites included variety shows, westerns, and crime.

May Seagoe reported two studies relating to children and television (33, 34, 35). In the first, a sample

of 323 children from four school districts in Los Angeles County was studied to determine their television habits and perferences. A questionnaire was used with children in the upper grades, while the younger children were interviewed. Sixty-two percent reported owning television sets which they watched more than two hours per day. Miss Seagoe noticed that the time spent with all media increased with age—a fact somewhat at variance with Lewis' findings. Also reported were the usual declines in motion picture attendance, radio listening, etc., among those who had television sets. Preferred programs included adventure, comedy, westerns and family shows. Significantly, the children revealed that their favorite programs were not necessarily the ones they viewed most often—indicating that the desires of other members of the family played their part in television program selection.

In the second study, the investigator developed a rating scale by which an adult might judge how good any television program or motion picture is for children. This scale was developed by observing children at theatres and at "television parties" and questioning them as to their likes, etc. No claims are made that the scale is a final instrument, but it is a beginning and gives several clues as to the types of presentations which children really prefer.

Evry and associates (10) in a brief report summarizes the results of questioning teachers and parents as to the effect of television on such things as interest in sports, discipline problems, grades, etc. No information is given as to the research design or the nature of the sample. The percentages quoted reveal some differences in opinion between parents and teachers on the matters studied, but no tests of significance were applied.

Maccoby (23), in the study mentioned earlier, investigated, by the open-ended interview technic, the television habits of 622 school children in Cambridge as reported by their 332 mothers. She found no difference in viewing time at different age levels (again this is at variance with Lewis' findings), with the average weekday time being 2.4 hours and the Sunday time 3.5 hours. Maccoby could establish no novelty effect even when sets had been in the home two years.

Viewing seems to be done most in a family context both on weekdays and on Sundays. Whether or not friends come to view television with the children depends on the amount of set ownership in the neighborhood. As set ownership increases, viewing tends to become more of a solitary family affair. Within the family during viewing, little inter-personal communication occurs. The largest number (84 percent) of the sets are in the living room, interfering with other forms of family life. Some activities are carried on during television viewing, but these tend to be rather insignificant. About one-third of the families report a certain amount of tension over getting children to come to meals. This conflict is resolved in 16 percent of the cases by serving the children in front of the set. Bedtime was reported as presenting a serious problem in over one-third of the cases; children with television also go to bed later than children of the same age without television.

Television does not appear to have interfered with homework. It has, however, in the sample studied, substituted for radio, motion pictures and reading to a significant extent. While some of the television time comes from other media, much of it comes from playtime and creative activities. Maccoby then discusses the psychological implications of her finds.

The data presented in the studies reviewed in this section seem to justify the following generalizations:

1. Where television is available, children of all ages view it extensively, with the average running over 2 hours per day on school days and more than that on weekends. Averaging the results of all the studies, it would seem that children spend in the neighborhood of 20-25 hours per week watching television.

2. The preoccupation with television causes a decline in almost all other kinds of leisure-time activities. While it cuts down on the use of other media, it also cuts into participating activities such as playtime. The net result is that children's exposure to the mass media is increasing.

3. There as yet is no demonstrable effect of television on school achievement. The evidence in this regard is conflicting.

4. Television has had an effect on the family life of children. It has influenced their eating, sleeping and social habits generally in an undesirable direction from a psychological point of view.

5. If Lewis' data are confirmed by other investigators, there would be some reason to believe that a leveling-off factor will begin to operate after four years of set ownership and that television will be integrated more comfortably into family life. Further research is definitely needed here.

STUDIES OF THE CONTENT OF TELEVISION PROGRAMS

Several studies of the content of television programs have been made under the sponsorship of the National Association of Educational Broadcasters working with a grant from the Ford Foundation. Dr. Dallas Smythe directed the studies, two for the New York area and one for the Los Angeles area. The studies are reported in an article by Smythe (38), in a book by Smythe and Campbell (39), and in an article by Kingson (18).

The research design in each case was the same. A monitoring headquarters was set up in the test city. Receivers for each channel in the area were set up in the headquarters and monitored by a trained staff under constant supervision. Every minute of broadcast time was observed, categorized, and recorded. In that way, the entire television output of the stations serving these large metropolitan areas could be accurately described.

The first New York study set the pattern (38). The test week was January 4 to 10, 1951, when 33,837 minutes of broadcasting were presented. This broadcasting was broken down into the following categories: drama, 25 percent of total time, including 10 percent crime drama; variety, 14 percent; sports, 10 per cent; homemaking, 10 percent; children's programs—all types, 12 percent. In addition advertising occupied 10 percent and 5 percent went to news. The other categories, which might have included programs considered educational were even less—for example, information, 3 percent.

The Los Angeles study covered the week of May 23 to May 29, 1951. The investigators reported that:

"Approximately one-fourth (26 percent) of the total television program time during the test week was devoted to general adult drama programs. This was largely motion pictures. Domestic programs . . . for housewives and similar presentations took . . . 16 percent.

"News reports contributed 12 percent of the total, a proportion considerably inflated by the unusual circumstances of a "special events" telecast over two of the Los Angeles stations in connection with a kidnapping . . . which amounted to 8 percent of the total time on the air. Children's programs of all kinds took 10 percent of the total time, variety programs . . . took an equal amount and music . . . took six percent. Eighty percent of the total television time during the week of monitoring was taken up with these types of programs.

"If one considers program types without respect to their intended audiences, combining all drama programs (adult and children's), all variety (general, housewives', and children's), and all popular music (general and housewives'), these three categories account for 60 percent of all the program time. If the time of quiz, stunt and contest programs, personality shows, and sports programs is added to this, nearly three-quarters (73 percent) of the total time is accounted for (39:1)."

Other highlights of the report included the facts that informational, religious and discussion programs played a minor role during the test week; that westerns led the list of drama programs (10 percent) with crime close behind at 9 percent; that drama, popular music and variety dominated the evening hours; that 55 percent of the children's time was devoted to drama, one-half of which was western drama, and that one minute in six of Los Angeles television was devoted to advertising.

Kingson (18) reported on the second New York monitoring study conducted by Dr. Smythe during the week of January 4 to January 10, 1952. Kingson writes that:

". . . there have been few major changes in New York television during the year between the two surveys. There is more television—11.3 percent more —with the seven stations offering a little over 63 hours of additional program time. There is also more drama . . . all drama programs (including children's) in 1951 were 33.2 percent of programs while in 1952 they were 42.4 percent.

"Children's programs show a decrease from 12.5 percent to 11 percent, though children's western drama programs increased from 2.5 to 4.1 percent. Variety programs went down from 13.6 percent in 1951 to 6.2 percent in 1952; information programs from 3.3 to 2.9; sports from 10.1 to 8.4 (18:318)."

While the NAEB studies examined the overall content of television broadcasting in New York and Los Angeles, a more intensive study by Orme (26, 27) analyzed the crime content of television programs broadcast in the Los Angeles area May 1 to 7, 1951 and May 24 to 30, 1952. Every station in the area was monitored with special attention being given to programs designed for (or easily accessible to) children. The monitors had instructions to list and describe every crime portrayed during the week.

In the 1951 study (26), almost 1000 crimes were perpetrated on the television screens during the test week, with 82 percent of them occurring on children's programs. Seventy percent of all programming devised for children was based on crime. During the test week, 60 hours and 15 minutes of children's program time was devoted to crime. A tabulation of the types of crime shown ranges from arson through mayhem, kidnapping, and murder. Orme lists typical specific incidents and points out that while the trappings of the production (western, outer space, etc.) vary, the action is mainly criminal.

The 1952 study (27) indicated some improvement, particularly in the output of two stations. However, the overall picture was approximately the same. There were 853 major crimes shown on television during the week. The total volume of crime programming and the specific number of murders was greater, however, than in 1951. The monitors noted fewer incidents of outright horror and brutality. Orme also reported that the commercial rating of many of

the children's programs had dropped substantially during the year as the sets in use figure had fallen off from 32.2 to 22.3 for the hours from 5 to 7 p.m.

These monitoring studies went into much more detail than can be reported in this brief summary. However, certain generalizations can be suggested:

1. The amount of time devoted to programs which, even broadly interpreted, are educational in nature is very little when compared to the total programming in a saturated television area.
2. The bulk of programs which are available are in classifications which, while they may be entertaining, are not useful to the general public in helping them solve the tremendous problems which confront the nation nor do these program classifications illustrate many possibilities of expanding and enriching the cultural experience of the viewers.
3. The entertainment programs designed for children contain a tremendous amount of crime and violence to the exclusion of other possible dramatic, exciting, or comic material which might have a more wholesome effect.

STUDIES OF THE EFFECTIVENESS OF TELEVISION USED AS A MEANS OF INSTRUCTION

Television, as the motion picture, provided a ready-made research possibility for investigators to use to determine the effectiveness of communications. Consequently, even though television is still very young, several carefully controlled studies have been made on the effectiveness of television as a teaching instrument. Several of these studies have been sponsored by grants of money from the U. S. Department of Defense.

Rock and his associates (30) attempted to determine whether television could be used to teach Army reservists, the extent to which men remember what they learn by television, the best methods for teaching by television, and how the trainees liked television instruction. Eight one-hour television lessons were broadcast to 160 groups of reservists in 10 major cities. The groups were tested before and after the telecasts. The same included more than 3000 reservists.

Results reported by Rock reveal that: (a) all grades of officers and men made higher scores after viewing television, (b) mixed groups (different levels of intelligence and experience) can benefit from a single level of television instruction as all groups made significant gains, (c) tests of retention showed that both officers and enlisted men retained a substantial amount of the material over a period of three to six weeks, (d) analysis of the program kinescopes showed that topics treated explicitly resulted in large knowledge gains while topics treated sketchily failed, (e) the most effective teaching procedure included nar-

ration, and (f) four-fifths of the reservists rated television instruction "interesting" or "very interesting," a majority thought it better than the average training film, and approximately 75 percent said they would rather be taught by television than other classroom methods

Rock and his associates (29) made another study to determine the comparative effectiveness of television, kinescopes projected as motion pictures, and conventional classroom instruction, to investigate the factors that result in good educational television programs, and to determine the acceptability of television instruction to Naval Air Reservists.

Three groups of from 100 to 120 men from the Naval Air Reserve were set up. The groups were instructed by television, kinescopes, and conventional methods in two series of eight lessons, one a refresher course for officer pilots and the other a basic training course. Pre-tests and post-tests were used to measure learning.

The results reported include: (a) both television and television recordings (kinescopes) were superior to local instructors (in about 77 percent of the comparisons), (b) television and television recordings were about equivalent in their effectiveness (in 84 percent of the comparisons kinescopes were as effective), (c) direct narration and film animation were effective technics, while combined drama and narration was not as effective as direct narration, (d) trainees reported that they liked television instruction very much.

Wilson and Moe (47) of the U. S. Department of Agriculture made a study of the effectiveness of a series of 11 television programs, each of which demonstrated specific dressmaking operations. Prior to the telecasts, announcements were made concerning the program and a bulletin on dressmaking was offered free to women who telephoned for it (the study took place in Washington, D. C.). The study is based upon interviews with 251 women selected at random from the 974 who had requested the bulletin.

The interview questionnaires were extensive (57 questions), had been pre-tested, and were administered by trained interviewers. The interviewing took place three to four weeks after the programs had been completed. The audience was primarily made up of young homemakers with young children who had attained a high educational level and who had access to a sewing machine.

The study, then, was a study of a highly selected audience who had evidenced enough interest to obtain a copy of the bulletin. A high percentage of these women viewed the programs. Nine out of 10 viewed at least one, and the average for the entire series of 11 was almost 44 percent of the total audience. Seven out of 10 women missed programs be-

cause of family responsibilities. Nine out of 10 of the women reported that they had learned new things with those seeing more programs being more likely to learn. About one-half of the women used the practices demonstrated, putting at least one practice into use. The supplementary bulletin greatly increased the effectiveness of the programs, with seven out of 10 reporting that they got more help from the television demonstrations by having the bulletin. Most of the women favored longer programs as being more helpful (the programs were only 12 minutes in length). Finally, almost all the women (97.8 percent) wanted more television programs on sewing.

Stanley (40) has written a descriptive report of an experiment in the San Diego City Schools in using KFMB-TV in San Diego for a series of educational telecasts. Eighteen programs designed primarily for use in schools were broadcast in six weeks from April 29 to June 7, 1952. The majority of the report is taken up with an account of the development and production of the programs and is of great interest to individuals and groups thinking of similar activities. In addition, an evaluation of the programs was attempted by the Research Department of the San Diego Schools.

A brief checklist was developed which teachers were asked to fill out in connection with each program. This checklist had a four-point rating scale and provision for subjective reactions as well. No great claims are made in the report for the validity of the results, but they do give an indication of teachers' observations of the effectiveness of a series of planned telecasts designed for in-school use. Teachers ranked the programs as having great value in interpreting the schools to the general public.

The evaluations revealed a need for great coordination with the curriculum, as elementary teachers ranked elementary programs high, but secondary programs low, and the reverse was true of secondary teachers. All teachers tended to rate a majority of programs above the median level. Demonstration lessons, particularly in science, were rated as having the greatest interest for students. Most teachers thought that study guides would have made the programs more effective.

Goldberg (14), in one of the Hofstra College studies, reported a brief investigation attempting to determine whether listening to or viewing a simulcast (combined radio broadcast and telecast) resulted in greater liking and retention on the part of listeners of viewers. He used 46 subjects, 22 of which watched the telecast of Arthur Godfrey's Talent Scouts and 24 of which listened to the radio broadcast of the same program. The subjects checked a rating sheet every five minutes and then at the end of the program.

A week later 12 viewers and 18 listeners were given a short content test.

The television group scored higher on every rating point on the "liking" scale than did the radio group including the whole show rating and the median rating. However, the form of the two profiles was very similar—that is the radio group liked the same parts of the show as the television group, but not as intensively. On the memory test, the two groups showed similar trends: the television group remembered at a higher level than the radio group. One interesting note was that 100 percent of the television group could name the sponsor correctly while only 72 percent of the radio group could do the same. However, the sample was very small and no tests of significance were applied.

The following generalizations seem justified by the data reported in these studies:
1. Television is an effective medium of instruction.
2. Instruction by television is remembered by those who experience it.
3. All studies report that learners like to receive instruction by television.
4. Although more study is needed to establish specific technics that are most effective for television instruction, it seems to be established that direct instruction, supplemented by printed bulletins, is one effective way to use television. Dramatic and other complicated technics would seem to need further investigation.
5. Television as used for in-school broadcasting is also an excellent public relations medium.

STUDIES OF THE TECHNICAL ASPECTS OF TELEVISION UTILIZATION

If and when television is used for educational purposes, whether in schools or outside of schools, certain technical problems will need to be solved. For example, what size screen is more effective for a given size or group? Will extended viewing hurt the eyes? How should sets be placed for group viewing? These and other questions will have to be answered. At the present time, a small amount of research is available which throws some light on a few of these technical questions.

Lewis (22) in May of 1950 reported a series of small studies on the technical problems of utilization. He investigated (a) seating arrangements for viewing, (b) optimum size of screen, (c) location of receiver, and (d) effect of ambient illumination. A special room was set up in which chairs could be arranged in various patterns, receivers set up at various heights (a series of 5-inch steps was used), a measured track along which subjects could walk and report maximum and minimum viewing distances was placed on the floor, and a series of angles were marked on the

floor for set placement. Lewis used screen sizes available at that time (10-inch, 12-inch, and 16-inch direct view and the 15 x 20-inch projection model). Since that time, of course, sets with much larger direct view screens are available—screens as large as 24 inches are now being shown in the stores.

Lewis used 600 students in all his experiments and reported the following results: (a) the center of the television screen should be between four and one-half and six feet above the floor in the average classroom (it is to be noted that Lewis calculated a classroom 23 feet wide without the side aisles and a maximum of 45 feet long; this type of classroom has largely been superseded in many places with the square type, approximately 30 feet by 30 feet), (b) staggered rows of chairs should be used, and (c) some incidental illumination should be present in the room at the time of viewing.

In his study of screen size, Lewis reported that a 10-inch screen could be viewed by a median number of 15 students, the 12-inch by 24 students, the 16-inch by 30 students and the 15 x 20-inch projection screen by 48 students. His maximum figures for each screen were much higher. This report by Lewis is definitely at variance with the recommended standards of the Department of Audio-Visual Instruction of the National Education Association, for the size of classroom screens for projected materials. The difference is even greater when it is remembered that the size of a television screen is calculated by the length of the diagonal.

Two rigorous studies relating to television viewing conditions were conducted at the Los Angeles College of Optometry. The details of these studies, particularly the optometric data and mathematical procedures used are beyond the scope of a general review such as this. Interested persons should refer to the original studies. However, the general findings are pertinent to the problem of this paper.

Stein, Hofstetter, and Graham (42) investigated the effect of placing light-absorbing filters in front of a television screen (in the presence and absence of ambient light) on the discernibility of the television image. They also made additional tests with an ophthalmic filter placed before the viewer's eyes. The hypothesis investigated was that a light-absorbing filter placed in front of the screen would reduce the amount of ambient light on its way to the screen as compared with a single reduction of the transmitted light from the screen. This, it was theorized, would result in greater discernibility. The results verified that phase of the investigation: with ambient light present, a light-absorbing filter placed in front of the screen showed higher relative discernibility. These results did not obtain with the opthalmic filter.

Stein and Hofstetter (41) also studied the effect of prolonged television viewing on the eyes. Five subjects viewed television continuously for 12 hours. They were tested with various optometric measures, clinically observed, and rendered subjective reports as to how they felt, etc. The investigators reported that no significant changes occurred in the clinical optometric findings. The subjects varied as to how the prolonged viewing affected them. Two subjects had no complaints. Two reported headaches as time went on, but a later diagnosis revealed that one of the headaches was probably due to another cause. No headaches were reported the following day. Some ocular discomfort was reported by three of the five subjects, but this discomfort had no effect on the optometric findings.

The technical research reported in this section is so sketchy that it probably does not justify generalization. Apparently statements that television "hurts the eyes" are open to serious question. Much more research needs to be done in the area of optimum screen size, etc. It would seem that light-absorbing filters would be useful on classroom television receivers, particularly in those classrooms where it is difficult to control light.

SUMMARY

The existing research on television of interest to educators was analyzed and found to be grouped into four general categories: (a) studies of the general social effects of television, (b) content analyses, (c) studies of the educational effects of television, and (d) technical studies. Studies in each of these four categories were reviewed and generalizations drawn from them. No attempt was made to review related research that is, no doubt, applicable to the problems of television. For example, the vast amount of research information developed in the audio-visual field during the past 30 years was not touched. Future investigators will find that the existing television research and the existing audio-visual research provide only a sketch map of the field of audio-visual communication. To use these important instruments wisely, and this is particularly true of television, it is necessary that we know and understand much more. This is the challenge for future research.

REFERENCES

1. Besco, G. S., "Television and Its Effects on Other Related Interests of High School Students," *English Journal*, 1952, 41, 151-152.
2. Bradway, Bruce M., "Four Year Study of High School Students' TV Habits Indicates Definite Viewing Trends," *Advertising Age,* July 23, 1951, 47-58.

3. Bradway, Bruce M., "How Television Viewing Has Changed the Family Life of South Shore High School Students," *Advertising Age*, July 30, 1951, 39-49.

4. Broderick, Gertrude G., *Radio and Television Bibliography*, U. S. Office of Education Bulletin No. 17, Washington: U. S. Government Printing Office, 1948.

5. Carlson, Margaret, unpublished study reported by Witty (51).

6. Clarke, Walter J., *Of Children and Television*, Cincinnati, Ohio: Xavier University, 1951.

7. Coffin, Thomas E., "Television's Effects on Leisure-Time Activities," *Journal of Applied Psychology*, 1948, 34, 550-558.

8. Dunham, Franklin, "Effect of Television on the School Achievement of Children," *School Life*, 1952, 34, 88-89.

9. Eakin, M. K., "Television in Education," *Elementary School Journal*, 1951, 52, 129-131.

10. Evry, Hal, *TV's Impact on Education*, Los Angeles: Woodbury College, 1951.

11. Fearing, Franklin, and Rogge, Genevieve, "A Selected Bibliography in Communications Research." *The Quarterly of Film, Radio and Television*, 1952, 6, 283-315.

12. Gable, M. A., "Viewer's Views on Classroom TV," *Educational Screen*, 1951, 30, 226-227.

13. Gessleman, D. B., "Television and Reading," *Elementary English*, 1951, 28, 385-391.

14. Goldberg, Herman D., "Liking and Retention of a Simulcast," *Public Opinion Quarterly*, 1950, 14, 141-142.

15. Gould, Jack, "Pupils' Time Spent at TV Rivals Hours in Classes," *The New York Times*, March 6, 1950.

16. Hofstetter. H. W., "A Survey of Visual Complaints Related to Television," *American Journal of Optometry and Archives of American Academy of Optometry*, 1949, 26, 483-489.

17. Jenssen, Ward J., "Unpublished Study of the Effects of TV on the Motion Picture Industry," Applied Psychology Associates, 6042 Second Avenue, Los Angeles 43, California.

18. Kingson, Walter, "The Second New York Television Survey," *The Quarterly of Film, Radio and Television*, 1952, 6, 317-326.

19. Lewis, Philip, "Television Settles Down," *Clearing House*, 1951, 26, 168-171.

20. Lewis, Philip, "Teen-agers Tame TV," *Educational Screen*, 1951, 30, 174-175.

21. Lewis, Philip, "TV's Impact on Teen-agers," *Phi Delta Kappan*, 1951, 33, 118-120.

22. Lewis, Philip, "TV Takes a Test," *Educational Screen*, 1950, 29, 196-198.

23. Maccoby, Eleanor E., "Television: Its Impact on School Children," *Public Opinion Quarterly*, 1951, 15, 421-444.

24. McDonagh, Edward D., and Associates, "Television and the Family," *Sociology and Social Research*, 1950, 35, 113-122.

25. McGinnis, W. C., "Now It's Television," *Journal of Education*, 1950, 133, 152-154.

26. Orme, Frank, "Crime on Television . . . A Record of L. A. Stations, May 1-7," *TV*, 1951, 4, 6-7.

27. Orme, Frank, "Crime on Television . . . A Record of L. A. Stations, May 24-30, 1952," *TV*, 1952, 5, 6-7.

28. Riley, John W., Cantwell, Frank V., and Ruttiger, Katherine F., "Some Observations on the Social Effects of Television," *Public Opinion Quarterly*, 1949, 13, 223-234.

29. Rock, Robert T., Jr., Duva, James S., and Murray, John E., "The Comparative Effectiveness of Instruction by Television, Television Recordings and Conventional Classroom Procedure," *Navexos*, P. 850-2, Port Washington, L. I., New York: Special Devices Center, U. S. Navy.

30. Rock, Robert T., Jr., Duva, James S., and Murray, John E., "Training by Television: a Study in Learning and Retention," *Navexos*, P. 850-3, Port Washington, L. I., New York: Special Devices Center, U. S. Navy.

31. Rose, Oscar, editor, "Radio Broadcasting and Television: an Annotated Bibliography," New York: H. W. Wilson, 1947.

32. Rutter, George W. A., unpublished study reported by Witty (51).

33. Seagoe, May V., "Children's Television Habits and Preferences," *The Quarterly of Film, Radio and Television*, 1951, 6, 143-153.

34. Seagoe, May V., "A Score Sheet for Children's Television," *The Quarterly of Film, Radio and Television*, 1952, 6, 327-337.

35. Seagoe, May V., "Some Current Research in Television for Children," *California Journal of Educational Research*, 1952, 3, 151-153.

36. Silvey, Robert, "Methods of Viewer Research Employed by the British Broadcasting Corporation," *Public Opinion Quarterly*, 1951, 15, 89-104.

37. Silvey, Robert, "Television Viewing in Britain," *Public Opinion Quarterly*, 1950, 14, 148-150.

38. Smythe, Dallas W., "An Analysis of Television Programs," *Scientific American*, 1951, 184, 15-17.

39. Smythe, Dallas W., and Campbell, Angus, "Los Angeles Television, May 23-29, 1951," Urbana, Illinois: National Association of Educational Broadcasters, 1951.

40. Stanley, DeGraff, "A Summary Report and Evaluation of San Diego City Schools – KFMB-TV

Channel 8 Educational Television Experiment," San Diego, California: San Diego City Schools, 1952.

41. Stein, Harold, and Hofstetter, H. W., "Effects of Prolonged Television Viewing on Certain Optometric Findings," *American Journal of Optometry and Archives of American Academy of Optometry,* 1951, 28, 520-533.

42. Stein, Harold, Hofstetter, H. W., and Graham, Robert, "The Effect of Light Absorbing Filters on the Discernibility of a Television Test Pattern," *American Journal of Optometry and Archives of American Academy of Optometry,* 1951, 28, 19-28.

43. Swanson, Charles E., and Jones, R. L., "Television Owning and Its Correlates," *Journal of Applied Psychology,* 1951, 35, 352-357.

44. "TV — Enemy of Education?" *Senior Scholastic,* 1950, 57, 20-21.

45. "TV Lifts Students' Grades in Texas but Lowers Them in New Jersey," *Advertising Age,* March 20, 1950.

46. "TV Hurts Grades of Sophs and Juniors but Helps Seniors," *Advertising Age,* May 8, 1950.

47. Wilson, Meredith C., and Moe, Edward O., "Effectiveness of Television in Teaching Sewing Practices," Extension Service Circular No. 466, U. S. Department of Agriculture, Washington, D. C.: Government Printing Office, June, 1951.

48. Witty, Paul A., "Children's Interest in Comics, Radio, Motion Pictures, and TV," *Educational Administration and Supervision,* 1952, 38, 138-147.

49. Witty, Paul A., "Interest in TV and Success in School," *Educational Administration and Supervision,* 1951, 37, 193-210.

50. Witty, Paul A., "Television and the Educative Process," *School and Society,* 1951, 74, 360-372.

51. Witty, Paul A., "Television and the High School Student," *Education,* 1951, 62, 242-251.

52. Witty, Paul A., "Television as an Aid to Instruction," *School and Society,* 1951, 74, 273-276.

53. Witty, Paul A., "Two Studies of Children's Interests in TV," *Elementary English,* 1952, 29, 251-257.

54. Young, Gertrude, "Operation Video," *Clearing House,* 1950, 24, 156-157.
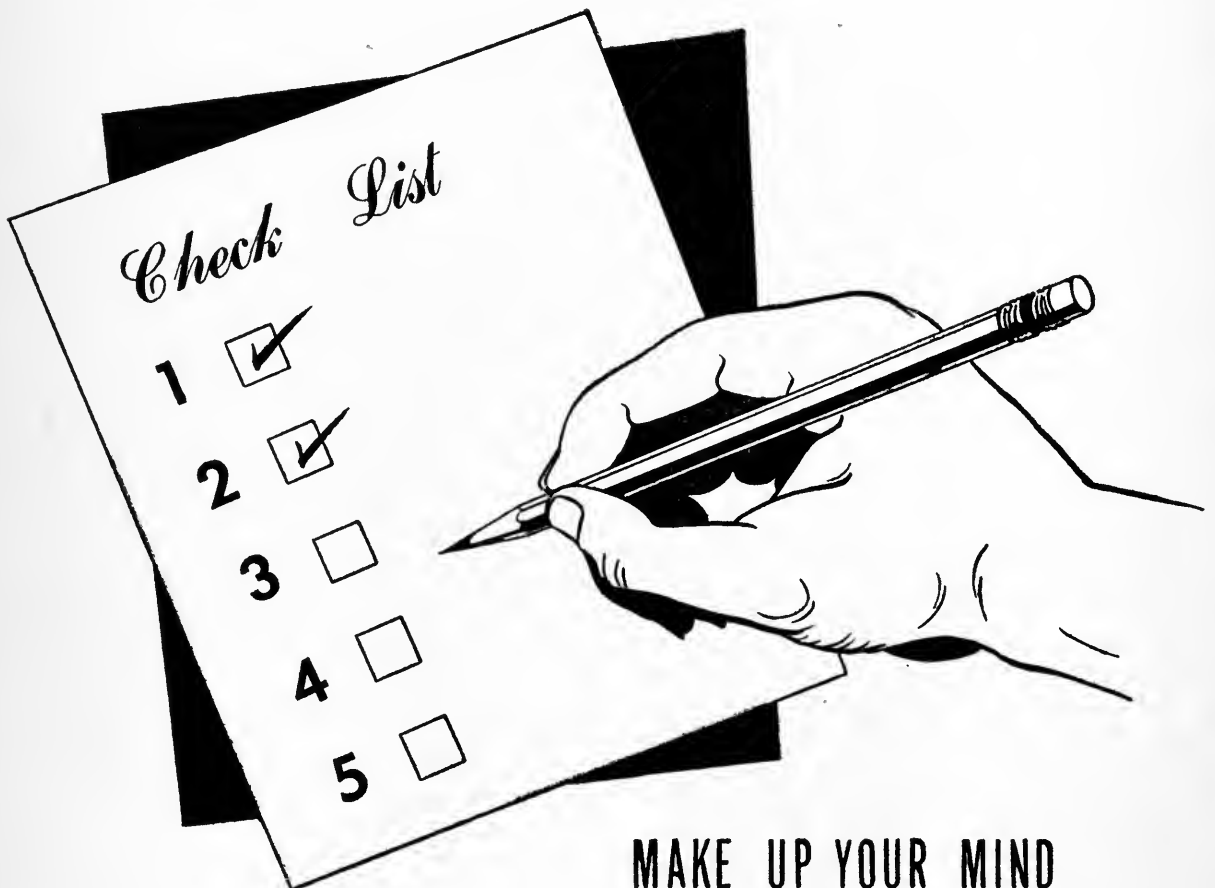
MAKE UP YOUR MIND

VIII Miscellaneous

A. ADULT EDUCATION

This is a report on the extent to which audio-visual materials are used in adult education. The author, in cooperation with the Bureau of Adult Education of the California State Department of Education, began the investigation in October, 1951, and completed it in August, 1952.

Use of Audio-Visual Materials in Adult Education

By
RUE W. HARRIS
Audio-Visual Guide. Vol. 19, No. 8. April, 1953. Pp. 5-6.

The specific purposes of the survey were to (1) determine the number of materials the teachers were using; (2) indicate what effect audio-visual training, type of teaching credential, and years of teaching experience had had on the usage of audio-visual materials; (3) determine the number and location of teachers who expressed interest in taking a course in audio-visual teaching techniques with emphasis on problems encountered in adult teaching; (4) indicate what distinctions in audio-visual materials usage existed among the teachers of different subjects; and (5) determine what audio-visual materials the teachers would like to use if available.

Over five thousand teachers were contacted, and usable responses were forthcoming from approximately fifty per cent. The instrument used was a short, one-page, checklist-type questionnaire, distributed by directors and principals of the public adult schools in California. Eighty-five per cent of the public adult schools in California were represented in the returns.

NUMBER OF TEACHERS USING THE DIFFERENT MATERIALS

The data showed that the blackboard was used by more teachers than any other audio-visual aid, with over three-fourths of the teachers reporting usage. The motion-picture projector was second, with a little less than half of the teachers stating that they used it. The percentages of teachers reporting use of the various materials and equipment covered by the survey were:

1. Chalkboards 78%
2. Motion-picture projectors 46
3. Flat pictures 46
4. Charts or graphs....................................44
5. Bulletin boards 42
6. Objects, specimens, models..................35
7. Record players 23
8. Maps or globes......................................18
9. Filmstrip projectors 17
10. Recorders (disc, tape or wire)...........14
11. 2" x 2" slides 14
12. 3¼" x 4" slides 13
13. Radio 12
14. Opaque projectors 9
15. Felt boards 7
16. Television 4
17. Stereoscopes 3
18. Microfilm 3
19. Microprojectors 2
20. Dioramas 2
21. Flashmeters (tachistoscopes) 2

SOURCES OF MATERIALS

The teachers were asked to indicate the sources of the audio-visual materials that they used. About sixty per cent of all the materials used came from the school plants. Approximately thirty per cent of the materials were obtained from personal or private sources. The audio-visual centers supplied only about ten per cent of the materials. The amount of use of the audio-visual centers would naturally be expected to be small, because of the limited number of types of materials and pieces of equipment which they can circulate. The only audio-visual materials obtained to any great extent from the audio-visual centers were films, slides, and filmstrips.

While the number of types of audio-visual materials which can be circulated by school district audio-visual centers is limited, it was discovered during the investigation that teachers of adults are handicapped by the booking methods used by most centers. Whereas teachers of regular day-school classes have *comparatively* systematic courses of study which permit planning up to six or eight weeks in advance, teachers of adults operate under more

flexible programs. This factor prevents most teachers of adults from ordering from the audio-visual centers, since six to eight-week advanced bookings are the rule. Some audio-visual centers make materials available on short notice, but in most cases there is no delivery service. Even more complicating is the fact that adult classes usually meet only once or twice a week for two-hour sessions. Therefore, there is limited opportunity to make adjustments in the use of a particular aid, such as a regular day-school teacher can make when classes meet daily.

The point is this: Some sort of rapport must be established between audio-visual centers and teachers of adults, so that shorter booking periods may be used. In some localities this has been done, but there is room for improvement. True, shorter booking periods may cause extra work on the part of audio-visual personnel, but certainly departments of adult education should be able to defray all or most of the extra expense.

It was also found that seldom was there a person in charge of audio-visual aids in the adult schools. It should be the responsibility of the principal of an adult school to designate someone to familiarize the teachers with the methods of obtaining audio-visual materials, as well as with the methods of effective use. This person should take care of all ordering and distribution within the school.

AUDIO-VISUAL MATERIALS WANTED BY THE TEACHERS

Although nearly half of the teachers reported that they used motion-picture films, about another one-sixth of them stated that they would like to use films if available. This situation is related to the ordering and booking procedures mentioned in the preceding section. However, the main problem is probably the lack of suitable film material. More films for use in adult education should be purchased by the audio-visual centers—but this cannot be done if films are not being produced for use in adult education. There are not enough films available on the adult level.

Between ten and fifteen per cent of the adult-school teachers stated that they would like to use television, motion-picture projectors, materials to make audio-visual aids, slidefilms, recorders, and opaque projectors. It would seem that most of the equipment mentioned, except television receivers, would already be in the school buildings and that the teachers of adults would have access to it. However, there are limitations, as far as adult classes are concerned, in the use of equipment which is located in the school plant. As a follow-up, the author contacted a score of principals of different adult schools who confirmed the finding that such limitations exist. Equipment should be made available to adult-school teachers just as it is made available to regular day-school teachers. It should be noted, however, that, even with the limitations, most of the materials and equipment used by teachers of adults were obtained from the school plants.

THE EFFECT OF AUDIO-VISUAL TRAINING ON THE USAGE OF AUDIO-VISUAL MATERIALS

Fifty-three per cent of the teachers reported that they had had audio-visual training. About twice as much usage, percentage-wise, was made of audio-visual materials by teachers who had had training as by teachers who had not had training. About the same ratio prevailed for teachers who had a secondary-teaching credential as compared with those who had some type of credential.[1] This would be expected, since the correlation between having audio-visual training and having a general secondary-teaching credential is very high (Chi-square is 9.12).

The question was raised as to whether emphasis had been placed on the use of a few audio-visual materials in audio-visual education courses to the exclusion of others. Several of the more popular audio-visual materials were analyzed in terms of usage by teachers with and without audio-visual training. In every case, a larger percentage of teachers who had had audio-visual training used these materials—in ratios of from two-to-one to three-to-one. This indicated that systematic training had been general in nature, and not restricted to over-emphasis on only one or two materials.

Years of teaching experience had no significant effect on the usage of audio-visual materials.

USAGE OF MATERIALS BY SUBJECTS

An analyysis was made of the use of different audio-visual materials by the teachers of the different subjects. There were over 150 titles of courses which were categorized under twenty-five headings. The analysis was not concerned with the *extent* of use, but rather with the number of teachers who reported *any* use of the different materials. On this basis, teachers of agriculture ranked first, with social-studies teachers second. The twenty-five subject areas ranked as follows with respect to the usage of all the audio-visual materials combined:
1. Agriculture.
2. Social Studies.
3. Photography.

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1. In California a general secondary-teaching credential is awarded when a prescribed course of study in Education is followed. It is valid for grades 7 through 12, junior college, and adult education. In this report, "other" credentials refer mainly to those in special subjects with little or no training in Education.

4. Driver Education.
5. Continuation and Elementary Review.
6. Mathematics and Science.
7. Health and Hygiene.
8. Parent Education.
9. Americanization.
11. Foreign Languages.
12. Mechanical Drawing and Drafting.
13. Foods and Nutrition.
14. Trade and Industrial and Shop.
15. Public Speaking and Dramatics.
16. English and Composition.
17. Psychology.
18. Art.
19. Miscellaneous.
20. Business Education.
21. Music.
22. Sewing and Millinery.
23. Arts and Crafts.
24. Physical Education.
25. Law.

The actual differences between the subject areas were small. There was less than one per cent difference between the usage of audio-visual materials, for example, by the teachers of agriculture and the teachers of social studies. Teachers of law had about one-fourth the usage of the teachers of agriculture.

Teachers Who Wanted a Course in Audio-Visual Teaching Techniques

Almost half of the teachers who responded stated that they would like a course in audio-visual teaching techniques with emphasis on the problems encountered in adult teaching. Rather surprisingly, nearly forty-three per cent of the teachers who wanted a course had already had audio-visual training. What this seems to indicate is that the teachers would like an advanced course applicable to the teaching of adults. While the general principles of good audio-visual usage are valid for teaching adults, there are many problems encountered in adult education which are in a sense unique. The number of meetings per week; the length of the sessions; the lack of suitable materials—these are just a few of the problems which need special attention.

Conclusions and Recommendations

Conclusions and recommendations which the author believes are suggested by the study follow:

1. Most of the audio-visual materials used by teachers of adults are located in the school building. The audio-visual centers are used to a relatively small extent, because of the limited number of materials which they can store and circulate.

2. There should be some sort of special booking procedure established for teachers of adults, since they cannot predict far in advance the time when they will need certain audio-visual materials.

3. There should be some attention given to the problem of production of audio-visual materials—especially films—for use in adult education.

4. There should be an effort on the part of adult-school principals to acquaint teachers with ordering and booking procedures, as well as to follow up the use of materials in the classrooms.

5. An effort should be made to have the school equipment as easily available to the teachers of adults as to the regular day-school teachers.

6. Audio-visual training has had a marked effect on the usage of audio-visual materials.

7. Audio-visual education courses have apparently been effective in the usage of all materials, and not limited to emphasis on a few.

8. The number of years of teaching experience seems to have no effect on the usage of audio-visual materials.

9. There is not a large difference in the varied use of audio-visual materials between teachers of different subjects.

10. In-service audio-visual education classes should be made available to teachers of adults. Emphasis should be on problems encountered in teaching adults.

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Reserve's telecourses, as they are called, offer proof that we in the field of adult education have finally come upon an ideal outlet for the widespread dissemination of knowledge.

In September, 1951, the University in conjunction with commercial station WEWS in Cleveland began offering college courses for credit on television. Frankly an experiment, the idea grew out of previous experience in television programming and the conviction of the University that it had a responsibility for extending its instructional resources as widely as possible to the community. The community, in this instance, was the television audience within a range of 70 miles.

Telecourses at Western Reserve

By JOHN F. WHITE

The first two courses offered in the home-television plan were on Introductory Psychology, a three-credit course, and Comparative European Literature, offering two credit hours. Each course was given at the same time in the morning, 9:00 to 9:30 a.m., on alternating days during the week.

The response from viewers in the area proved that the courses were popular and effective. Letters began coming in—more than 5,000 of them during the

first year—offering excellent testimony to teaching by television and the need it filled in the lives of many persons, including those actually enrolled and many more who were merely viewing the programs.

One person from Kent, Ohio, wrote, "I am not trying for credits but it is an opportunity to catch up on a lot of education I never had a chance at. I can imagine there are a lot of other people who didn't have an opportunity because of the depression."

A woman in Wadsworth, Ohio, wrote, "I'd like to thank you for bringing such an adult-level, non-compromising program to TV and our homes. You could so easily have decided to popularize these courses but instead you seem to have kept a very academic and scholarly approach."

Many mothers voiced approval, citing home-making chores which had prevented educational opportunities up to that time. One summed it up with, "I feel sure that this program is the answer to the harrassed homemaker's thirst for knowledge and wider interests."

Even Grandmother had a good word. One wrote, "I live in Portland, Trumbull County. I am 76 years old and only had one year in college when I was young, so I am very much interested in sitting in my living room and going to college."

As of the spring semester of 1953, eleven courses for credit and three of the short-course non-credit type have been given by Western Reserve. More than 2,000 persons have enrolled in the courses to date. But more important, the University is extending its "classroom" beyond the widest limits previously dreamed of. More than 50,000 people in northern Ohio and western Pennsylvania are watching the daily series of programs. This figure is a conservative estimate based on surveys conducted by impartial, professional agencies.

Although many questions still remain unanswered, we now know that college credit courses can be presented successfully over television. We know, too, that students who enroll in such courses do as well and learn as much as the typical student in the classroom. As important, the 17 professors who have appeared during the series testify that they learned much and today, as a result of this experience, are better professors for Western Reserve University.

The new series of eight-week non-credit short courses has also offered much encouragement. Three such courses during fall and winter months have been on "Our American Government," "Festivals of Faith," a comparative religion course explaining religious festivals and ceremonies, and "Marriage Is What You Make It." These are offered on Saturday mornings and Sunday afternoons and have a larger following as more people view TV during the week end.

Whereas college credit courses on television are obviously limited to general subjects due to the nature of the subject matter and curriculum requirements, there is no limit at the adult education level to the non-credit type suggested here. We believe that television is a valuable tool for education, particularly mass education, and thus a tool for public service.

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B. ARMED SERVICES

The problem of this study emerged from the war-time experience of the writer with the use of audio-visual aids in training programs of the United States Army. The study seeks to answer the general question: what were the significant developments and techniques in the use of audio-visual materials by the Army, and how might they be applied to the improvement of college instruction?

A Study of Military Audio-Visual Programs[1]

**By
JAMES D. FINN**

Reprinted from Abstracts of Doctoral Dissertations, No. 60. The Ohio State University Press, 1950. Pp. 103-109.

The method of the study was to: (1) analyze college instruction, particularly with reference to the role played by audio-visual materials; (2) analyze and describe the general use of audio-visual materials in military training during World War II; (3) describe in detail the audio-visual program of the Command and General Staff School, Fort Leavenworth, Kansas, for the period March, 1943, until March, 1946; and (4) formulate some generalizations or hypotheses concerning audio-visual materials and their relation to the instructional organization of colleges.

The approach of the study was primarily historical in nature, relying on existing literature for the general study of military audio-visual programs and on source documents, photography, unpublished data, and personal experience for the account of the audio-visual program at the Command and General Staff School. The study is illustrated with 81 charts and photographs.

AUDIO-VISUAL AIDS AND COLLEGE INSTRUCTION

The improvement of teaching at the college and university level is a general concern today. Analysis reveals that a number of factors influence college teaching. These include faculty personnel policies, the increasing demand for college teachers, the pre-service preparation of college teachers, the recruit-

1. Full title: *A Study of Military Audio-Visual Programs, Particularly at the Command and General Staff School, with Some Implications for the Instructional Organization of Colleges.*

ment and selection of college teachers, the in-service training and supervision of college teachers, and instructional aids and services.

Of these, audio-visual materials play a large role in the field of instructional aids and services. Indeed, there is ample research evidence to support the contention that the use of audio-visual aids can improve instruction. Further, the President's Commission on Higher Education has urged that adequate administrative provisions, including organization, funds and personnel, be provided by higher institutions in order that audio-visual materials might be used widely and effectively in college instruction.

The application of audio-visual devices and techniques to the problems of college instruction is not conceived to be a simple matter. This study assumed that a thorough examination of the experience of using audio-visual aids in World War II might provide some suggestions for adaptation or transfer to higher education.

The General Use of Audio-Visual Materials in Military Instruction

Army instruction was a direct outgrowth of the military situation. The instructional doctrine of the Army was based upon the concepts of the purpose of victory, specificity of objectives, realism, application, and detailed planning for instruction. The doctrine set up three general approaches to instruction: (1) the five methods of instruction; (2) the six steps in the Herbartian mechanism of instruction; and (3) the series of applicatory methods, primarily pragmatic in nature. Great emphasis was placed on adequate instructor personality and upon supervision and in-service training of instructors.

Twenty-six types of audio-visual materials were identified as used in military training. The production of these materials was notable for sheer quantity, systematic planning of production, the variety of approaches developed audience-tailoring, and the techniques of forceful and vivid presentation developed. Production was dependent upon the optimum synthesis of the abilities of creative artists and training officers.

The best distribution pattern for audio-visual materials was based on a network principle which combined centralization and decentralization of function. Successful distribution required professional direction, efficient operating procedures, and adequate facilities, centrally located.

Utilization of audio-visual materials was controlled by Army instructional doctrine which was specific as to procedures to be employed. Motivation was always a problem in instruction and in the use of audio-visual aids, although many civilian writers have refused to recognize it as such. The military

experience would indicate that an adequate service organization for the production, distribution, and administration of the training aids program was the prerequisite of good use. To that end, most branches of the service developed the concept of the training aids officer—an audio-visual administrator.

The evidence indicates that the military experience in production, distribution, and utilization of audio-visual aids can be made applicable to higher education. The gamut of materials used, the techniques of production and distribution, and the administrative provisions for utilization are applicable to any audio-visual program, including one in a college or university.

Certain other aspects of the military audio-visual program either are not applicable or are debatable in their application. The military situation in which military instruction developed is not the same as the situation in higher education, although these two situations are not completely different. The extremes of military direction and control of instruction have no place in higher education. The applicability to college teaching of the high degree of specificity in military instruction, and of military instructional theory, is debatable.

The study of the literature on military instruction and the use of audio-visual materials is rewarding only in a general way to the student seeking information as to the possibilities of application to higher education. The general implications noted above are, in a sense, applicable, but not without further study designed to locate military instructional programs on a level comparable to civilian higher education and information of sufficient detail as to how these military audio-visual techniques might be applied. The study of the audio-visual program at the Command and General Staff School was designed to meet the requirements of a military institution of college grade concerning which adequate details as to the audio-visual program might be developed.

The Audio-Visual Program at the Command and General Staff School

The history of the development of the audio-visual program at the Command and General Staff School is a history of increasing centralization of instructional aids functions centering in Instructional Aids Services, the audio-visual center. The audio-visual program was oriented toward the improvement of instruction and the concept of an integrated organization set up to support instruction with audio-visual aids.

Instructional Aids Services was organized on a functional basis with various sections devoted to the production of charts, slides, photographs, and models and exhibits, and with other sections rendering library

and distribution service. The organization was operated by highly skilled personnel drawn from various branches of the arts and technology. The details of the organization and the administrative procedures developed . . . are considered important for application to higher educational institutions.

The audio-visual program at Leavenworth included a large operation in production. Although only three films were produced by the School during the period under study, many were composited, and otherwise created by cutting and editing. The Art and Photographic Sections of Instructional Aids Services produced approximately five hundred lantern slides a month from original art work to finished product. Charts were made in large sizes to meet the requirements of the large classrooms used at the School. About five hundred charts, using every visual technique, were produced every ten weeks. Recordings were also produced in quantity for instructional and instructor training purposes. Finally, the Models and Exhibits Section produced quantities of types of aids not produced in the special sections listed above. These included displays of material and equipment, terrain models, graphics, models, et cetera.

From the standpoint of adapting this experience to higher education, the importance of the production program was in the details of its operation. Any program set up to produce audio-visual materials in a college or university would meet many of the same problems and use many of the same techniques.

Utilization techniques had to be based upon the large class size at the Command and General Staff School. Special classrooms with facilities for motion pictures, slides, charts, recordings, public address equipment, and exhibit materials were created to enable instructors to do an effective job.

Distribution of instructional aids at Leavenworth was intimately related to utilization. An organization was set up to furnish audio-visual materials of any kind to the classroom at the desired time. Adequate information concerning available materials was furnished to instructors and facilities were established for previewing and listening.

Four of the instructional methods used at the Command and General Staff School—the lecture, the conference, the exercise, and the map exercise—made extensive use of instructional aids in their presentation of expository phases. The demonstration, tactical ride, map maneuver, and film used alone were audio-visual methods.

The expository methods used at the Command and General Staff School where audio-visual aids were effectively used are similar to expository methods in college teaching. Audio-visual materials can be used by college teachers to accomplish the same ends and

could probably be used more in problem raising and problem setting.

The concept of the map maneuver, the creation of a synthetic experience, holds much promise for college teaching, particularly in some fields, such as business administration. The dramatic demonstration has possibilities for wide use in college instruction, while the film used alone could only be so used when films of a general orientation type are made available.

Any extensive audio-visual program at the college level would probably apply and adapt many of the details of the instructional aids procedures, policies, and techniques developed at the Command and General Staff School. In addition, the following generalizations arising from the program seem to be particularly outstanding and adaptable to the college situation:

1. *The influence of the top-level administration.*—The constant drive on the part of the administration to improve instruction; the insistence on the use of audio-visual materials; the provision of adequate services to the instructor, and the whole program of supervision and help to the instructor all contributed to the wide and effective use of audio-visual materials.

2. *A centralized organization for the provision of audio-visual materials.*—The instructional aids program at the Command and General Staff School became really effective only after the creation of Instructional Aids Services with control over all audio-visual materials. A technique of centralization-decentralization was developed which has many possibilities of applications to colleges.

3. *The integration of the audio-visual organization with other services to the instructor.*—The instructional aids organization at the Command and General Staff School was made more effective from the instructor's point of view because it was integrated into a larger organization serving the instructor, including the library, printing plant, et cetera.

4. *The provision of adequate funds and facilities.*—Funds, materials, equipment, and supplies were provided in quantities sufficient to do the instructional job. Social (instructional utility) was the test.

5. *The provision of an audio-visual program using a whole gamut of materials.*—The instructor had available a range of materials, and he was not limited to motion pictures and film strips as in so many civilian programs.

6. *The emphasis upon local production related to utilization.*—Charts, slides, models, exhibits, and even films were produced locally to meet local instructional needs as a result of instructor planning and need.

7. *The availability of professional personnel.*—Artists and technicians were of primary importance

to the program. No program which approaches in scope the one studied could hope to succeed without them.

8. *The creative or imaginative factor.*—The play of creative thought and imagination were of prime importance in the production and use of audio-visual materials.

9. *Distribution and utilization as two sides of the same coin.*—Good use of audio-visual aids was dependent upon an efficient distribution procedure.

10. *The provision of adequate classroom facilities and personnel for efficient utilization.*—The classroom facilities and service personnel supplied the instructor with the necessary environment, equipment, and help to bring the full power of modern communication media to bear upon his instructional problem.

11. *The provision of adequate information and consultation services to the instructor.*—The assistance given instructors resulted in wide use of instructional aids and improved instruction.

12. *The improvement of instruction through audio-visual materials.*—Audio-visual materials made effective communicators out of ineffective communicators. The planning of instruction to include audio-visual materials and methods forced the instructor to consider his communication problem in detail and hence improve his approach.

RECOMMENDATIONS

1. The first requirement in the reorganization of colleges and universities for the purposes of improving instruction with audio-visual aids is a reorientation in thinking about college teaching. Teaching must be recognized as a form of communication requiring, in the twentieth century, the devices and techniques of communication of the twentieth century.

2. College and university administrators must place a greater emphasis upon instruction than they have in the past and exercise every influence within their power inside the democratic framework to develop an attitude on the part of the faculty favorable to teaching and its improvement, as well as to provide the proper facilities which will help in improving instruction.

3. A plan is proposed which attempts to integrate all the services (including audio-visual services) for instruction into one organization. This plan conceives of an officer of the administration serving the function of a "Director of Instruction." The director of instruction in a large university might be administratively responsible to the vice president in charge of academic administration. In a small college, these duties might be integrated with those of a dean or other officer.

Under the "Director of Instruction" would come an "Office of Instructional Services" that would in turn control the libraries, printing plant, laboratory equipment office, a clerical pool for instructors, a testing and statistical service, and the audio-visual service organization. The functional organization of the audio-visual service organization is suggested in detail.

4. It is recommended that higher institutions develop short, intensive in-service courses for new faculty members who should be required to go through the course before being allowed to teach in the institution that employed them. Such a course could be given before the autumn term opened and could include, among other items, the study of audio-visual materials and their role in college teaching. Following the course and the assignment of the faculty member to the instructional staff, supervision could begin to carry the in-service load, changing in character as the instructor developed.

5. Basic to all considerations in the development of an extensive audio-visual program at the college level is sufficient money to provide for adequate professional personnel and equipment and facilities. Other functions should not be reduced to build up the audio-visual program, nor is it argued that the proposed centralization plan will save money. The leaders in education, including higher education, must develop an expectation on the part of the public that the educational enterprise can no longer be conducted in terms of nineteenth-century techniques and economics. The atomic age is an educational age, and the funds must be provided.

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Certain factors present in all learning situations received considerable emphasis in the training of military instructors. Voice and diction, gestures, and other personality traits were stressed as pertinent to the effectiveness of the teacher. Likewise, emphasis was placed on the suitability of classrooms (particularly outdoor sites), proper lighting and ventilation, noise and other distracting elements, availability of appropriate instructional equipment and materials, seating arrangements, and general appearance of the classroom. These various factors though not training aids as such, did contribute to efficient use of all types of aids.

Audio-Visual Aids in the Armed Services

By
JOHN R. MILES
and
CHARLES R. SPAIN

Washington, D. C.: American Council on Education, 1947. Pp. 10-93, passim.

The importance of these personal factors was stressed in classroom and open-air demonstrations and lectures in which extensive use was made of blackboards for outlining lessons or new procedures, or presenting new terms, rules, or requirements. Instructors were cautioned about careless writing or

sketching and were urged to make certain that all students could see what was sketched and hear the accompanying commentary. Supervisors also assisted instructors in developing other good teaching habits, for example, standing aside from blackboards or other graphic aids and using pointers to refer to them, having the necessary teaching materials ready for use at the proper time, and not allowing graphic materials to be a distracting influence by being displayed before or after having served their purpose. To emphasize the significance of these factors, service publications on the use of training aids often contained sections on "chalk talks," and several special pamphlets dealing exclusively with the subject were prepared for instructors.

Training Literature

The innumerable manuals, guides, handbooks, circulars, bulletins, and other training literature developed during the war are not within the limited scope of this report. However, a brief comment here appears apropos since visualization came to affect directly the quality and usefulness of such materials . . .

Unfortunately, most of the men who saw actual combat service were graduated from flight schools before these more comprehensive manuals were available. Yet the fact that such manuals were thought necessary and were accepted so wholeheartedly indicates that civilian textbooks perhaps could often be improved in format, size of print, and degree of visualization . . .

Training Aids

As indicated previously, the term "training aids" may include a variety of instructional materials. For purposes of clarity, however, the following categories have been chosen for consideration: graphic materials, demonstration and practice devices, projection materials and devices, and auditory devices.

Graphics

Graphics included many types of visual materials such as charts, graphs, posters, maps, cartoons, and schematic drawings. Often one or more types of these aids were combined into graphic portfolios or "transvision" booklets which illustrated a sequence of related equipments or conditions. In other instances pamphlets were produced which consisted primarily of graphic sequences on the shape of ships, tanks, or aircraft, or which provided comparison of the constructions of different types of such objects. An example of such graphic charts is the series on various aspects of steam and Diesel installations found on Navy ships. In many of these, the inner mechanisms were shown in perspective by cutting away a section of the engine. The outer shell or surface was removed and the inner working parts therefore revealed. Sections of equipment, often difficult or impossible to see, could then be shown realistically in their actual position and relation to the whole engine . . .

Posters

Another type of graphic widely used in the services was the poster. While many instructors used the terms "chart" and "poster" interchangeably, the two devices were fundamentally different in purpose and appeal. Posters were likewise artistically designed, but were intended primarily to influence human behavior directly. They generally possessed greater personal appeal presumably on the assumption that they must attract attention to themselves, whereas charts were more often introduced by an instructor to serve his teaching purposes. Both were used in classrooms and both were seen on bulletin boards and school walls, but the chart more often served as an aid to classroom instruction.

The use of posters for out-of-class education made it essential that these devices be more than just attractive. After catching the attention of a viewer, their purpose was to drive home some lesson. That lesson might be identical with one in some organized course of instruction . . . The "independent" nature of the teaching done by a poster made personal appeal, simplicity, and directness its major characteristics. Posters seldom included formal explanations or needed such explanations of their meaning as did charts. Most posters employed some element of emotion — some appeal to the fear of injury or illness, to love of country or persons, or to anger about the scene depicted. Humor, pathos, ridicule, satire, hatred, and other emotional reactions were stimulated in many posters used in the services . . . In many instances, of course, the use of posters was not effective because of failure to display them properly and a tendency to leave posters on bulletin boards long after their usefulness had been served . . .

Demonstrations and devices

Devices of all kinds were widely used in instruction both for demonstration and practice purposes. "Real" objects were in many instances preferable, but the real objects of war were often difficult to procure, particularly in 1942-43. Consequently, many instructors salvaged materials from scrap-piles or searched supply depots for parts to build desired devices . . .

"Realistic" training

In some synthetic trainers simulation of reality was almost perfect, yet none of the dangers and little of the cost of "really doing it" were present. One type of Link trainer, for example, provided the cadet pilot with a moving view of the earth over which he

was passing, had the sound of aircraft engines coming from recordings, closely simulated the flight characteristics — "the feel" — of actual aircraft, duplicated the two-way communication of actual flight, and presented problems (via the instructor) actually encountered in past or future real flights. Such complete simulation of all the sensory experiences, even including a real (and hard) parachute to sit on and the smell of gasoline or grease, made a very real situation for the "practicing" pilot . . .

The "real thing" also became an integral part of medical training. For example, the reconstitution and administration of blood plasma were actually carried to completion in training. Trainees were required to demonstrate their knowledge of each step of the process and coach-and-pupil teams practiced each step, finally making the actual insertion of the plasma needle in the partner's vein. Trainees thus saw the whole operation, heard explanations and criticisms, felt the materials and the needle, and smelled the antiseptics. It is easy to see why "this subject became indelibly impressed on the mind of each student," for every sensory pathway was employed in the combined explanation, demonstration, and applicatory phases of instruction.

Mockups

The word "mockup" was employed in the services to describe a great variety of simulations of equipment involving varying degrees of abstraction from reality. While the previously mentioned synthetic trainers for flight and aerial gunnery were designed to develop dynamic skills and judgments necessary for successful operation of equipment, the more static skills and judgments required in maintenance and repair were usually best attained by practicing on the real object, even if the latter were placed in a situation or context which was only a part of or a mockup of reality . . .

Large models

Many other types of devices were also employed in Army and Navy classrooms. The most common of these were various types of models and "breadboards," the latter being operating layouts of all the parts of a piece of equipment on a flat board. Models varied in size from the small aircraft model to a huge 250 x 40 foot display model used by the Quartermaster Corps. The latter depicted a port installation. It was "built of concrete, suitably painted to indicate vegetation and other features and showed the rear, center and forward areas, the base of the division area and the combat zone" . . .

Many schools in various branches also had exhibit rooms, some quite large, where displays of all the types of equipment of that branch and some of the conditions of use of the equipment (employing sand-tables) were shown. Such exhibits gave trainees a comprehensive picture of their possible future responsibilities, and often visualized the results of doing things the right and wrong ways. Display-rooms were also set up in specialized schools showing the many parts of a particular gun, tank, ship, airplane, or of a complex piece of equipment. Smaller devices for all types of classrooms were in use throughout service training. Models, miniatures, parts of equipment and devices to illustrate principles or theories thus became standard classroom equipment in all aspects of military training.

Other types of models

Models were used for both military and academic purposes. The trainee learned from models how to pitch a tent, how to load a freight car, how to act on a rifle range, how to place materials in a warehouse, how to prepare field sanitation installations, how to construct bridges, and how to recognize planes, tanks, or ships. Many Navy men learned from models much of what they learned about ships even before they had gone aboard a ship . . .

Breadboards

While models clarified mechanical operations and theories, instruction on electrical equipment was often visualized by "breadboard" layouts. For example, the circuits of a particular service radio might be laid out, part by part, on one large board. Condensers, resistors, tubes, wiring, and other parts were hooked up to make a radio that "worked," yet with all its parts exposed to view. Circuits could be traced, the function of each part could be discussed, and the results of failure of parts could be demonstrated. Thus, the seemingly complex maze of parts mounted on the chassis of the "real" radio became relatively simple to understand and repairs easy to make. Similar breadboards were available for ignition and other electrical systems of all types of mechanized equipment, automobiles, aircraft, and tanks. In addition, breadboard layouts were developed to show the "truth" of scientific theories and formulas of electricity for resistance, capacitance, current, voltage, and their relationships . . .

Projected aids

The service training programs employed projected aids in all the ways that civilian schools had used them — and in many more. Slide films or filmstrips and sound (and a few silent) moving pictures were all used. While filmstrips and motion pictures were centrally produced and distributed, a comparably widespread use of still projectors occurred only with the teaching of "recognition." Individual instructors and some schools did, in isolated cases, use many slides for academic instruction, for example, in certain medical schools and in some aviation

training. However, standard equipment for instruction by slides was not used as generally in either Army or Navy training as movie equipment . . .

Among several unusual still-projection devices encountered, the Navy's visual aid projector and vectograph equipment illustrate service equipment adaptable to civilian school needs. The visual aid projector, with transparencies and accessories, "provided for classroom projection of charts, drawings, photographs, silhouettes, and minature models." At the same time, the instructor "could 'animate' the projected image of the original subject on the screen by pointing, writing, or otherwise marking on a special transparent place on the device. Accessories also permitted the use of the device as an automatic projector for slides of the two standard sizes." This projector thus combined all the uses of opaque or slide projectors with those of a blackboard, eliminating the need for an instructor to draw good pictures or diagrams. Instructors could screen all types of graphics and write data on them or point out important features of them. Special transparencies on navigation, meteorology, chemical warfare, electronics, and mathematics were available for use with this device, which also was of obvious value in recognition and nomenclature instruction . . .

Vectograph equipment provided three-dimensional presentation of photographs and drawings through the use of polaroid viewers. Stereoscopic illustration from ordinary lantern-slide projectors could thus be introduced into classroom teaching of navigation; instruction on basic principles of spherical trigonometry was often accompanied by use of stereoscopic illustrations. Slides used in vectograph equipment were 3¼ by 4 inches in size and could be used in any lantern-slide projector . . .

Films

Training films and filmstrips were produced in great quantities and were widely distributed throughout all the services. The War Department's basic field manual FM 21-5, considered films to be "among the most valuable and most modern aids to instruction" and encouraged their use as "a planned part of the instruction in all subjects for which they are available." This manual further urged that such films were "not to be considered as an emergency or substitute form of instruction" and that they were "not designed to be the sole means of instruction in a subject." Many service-school administrators commented on the fact that almost all of their curriculum was "visualized" by one means or another before the war was over, but added that films and filmstrips had most noticeably increased during the last years of the war. Statistics on film production show that thousands of films were produced in these later years

and help substantiate the assumption that visual material became in reality the "textbook" . . .

The immensity of the overall film programs of the services is indicated by the fact that "the armed forces, during the past four years have produced more than six fold as great a number of motion pictures and filmstrips as had ever been produced before for strictly educational purposes." For example, it has been estimated that the Army produced 2,326 training films and over 1,500 filmstrips during the period between Pearl Harbor and the surrender on the Missouri. Of the more than 1,500 filmstrips, it is noteworthy that only 41 were sound filmstrips . . .

Films for the service classrooms varied from the most elementary animations used in literacy training to highly technical films in mechanics or electronics. Ordnance and gunnery, transportation, communications and electronics, medicine and health, infantry, supply, aviation, navigation and seamanship, recognition and identification, chemical warfare, and other areas all had films to provide or assist in instruction on the operation and maintenance of equipment, the facts and theories involved, and the skills and judgments required in various phases of military duty in each field . . .

Auditory devices

Auditory devices were used extensively in several phases of service training — especially in aviation. The most obvious need for recordings was in the field of communications, since the learning of code and voice communication was essential to the safety and success of flight or ground missions. Practice provided the means of acquiring both speed and accuracy in Morse or voice codework and also developed facility and familiarity with the equipment and standard procedures used in communication. Disc recordings and recorders were most often used for code purposes, but magnetic-tape or wire recorders were peculiarly adapted to voice work. This wire and tape equipment avoided the problem of breaking, changing, and storing of record discs, for messages on the tape or wire could be "erased," the machine then being ready for the next student or next practice trial. Disc recordings were, of course, used to teach air-traffic or communications procedures and to illustrate good and bad diction. They were also used to provide "cockpit checkouts" for pilots, providing "the latest" and most complete word on location of controls, instruments, radio, and oxygen, and on "checkoffs," the "gadgets" and conditions which should be checked before or during flight. Other recordings tested pilot or crew reactions in the variety of emergencies which might arise, whether because of weather, mechanical, or combat situations in flight . . .

The Navy's Oriental-language program likewise made extensive use of auditory devices. The entire

first "book" of the course in Japanese was recorded on some sixty-two recordings and students were provided with playback equipment in their rooms. Tape recordings (Mirrophones) were also used to enable students to hear their own speech. The oriental-language school at Boulder, Colorado, devised its own broadcasting station which broadcast each evening a half-hour of news which students were required to hear and to report on the following morning. Auditory devices were considered especially important in the study of Chinese, because of the meaning imparted in that language by tonal variations. "Tone study" necessitated constant imitation of the correct tonal effects provided by recordings . . .

UTILIZATION AND EFFECTIVENESS

Summary

This survey of training-aids research includes the major studies conducted by the armed forces. The findings are summarized in the order in which the studies were presented.

1. Films and filmstrips. — Studies reviewed support the contention that films can and do affect emotional attitudes in the direction predetermined to be desirable. Furthermore, such attitudes tend to persist for a considerable time. Films also definitely increase factual knowledge, and such knowledge also remains with the trainee for a considerable period of time. Studies of the use of filmstrips show that instructors tend to indicate approval of their value, but at the same time do not use them as successfully or as often as films.

2. Special techniques for using training aids. — Surveys and studies of the armed forces have shown that preparation of a class for seeing a film increases the learning value of films and that audience participation in filmstrip-showings increases the amount of factual knowledge learned. This increase in factual knowledge was especially significant in difficult material, in groups with low motivation, and in groups of average and low intelligence.

3. Special devices. — Research studies conducted on the effectiveness of special devices permit no general conclusions. Some devices clearly were helpful in training, while others had doubtful or negative values. Tentative conclusions are that a device must be considered as an aid and not as a teacher, that training on actual equipment is preferable in certain cases, and that transfer of training from one device to another occurs only when the devices contain identical elements.

4. Opinions of instructors and trainees. — All studies indicate general approval of extensive employment of training aids; certain studies suggest that trainees desire a balance between use of training aids and operation of equipment; and that the majority of instructors prefer movies to filmstrips. Instructors

further believe that movies and filmstrips shorten training time, result in greater learning, and stimulate interest and motivation. Finally, returned veterans now in college and public schools overwhelmingly endorse a greater use of audio-visual aids than is now characteristic of civilian education.

IMPLICATIONS FOR CIVILIAN EDUCATION

One immediate outcome of this survey has been the realization that the program of training aids developed in the armed forces is not an innovation in American education. The armed forces did utilize audio-visual aids far more than did most civilian schools prior to World War II, but the program as implemented in military training rested to a considerable extent on previous research completed outside the military framework. Implications of this aspect of military education must be derived primarily, therefore, from the extent of use and varieties of training aids, relatively new purposes projected for such devices, techniques of use employed by military instructors, and certain administrative and distributive practices.

1. *Multi-sensory instructional materials should be used extensively at all levels of education . . .*

2. *Effective use of newer types of instructional materials should be based on systematic and careful studies by educational groups of the functions of such materials in teaching and learning . . .*

3. *Multi-sensory instructional materials should be conceived as aids rather than as self-contained teaching devices . . .*

4. *Improvement of instruction through the use of a variety of instructional materials can be effected by local ingenuity and initiative . . .*

5. *Multi-sensory instruction materials should be employed in general education as well as technical and vocational training . . .*

6. *Multi-sensory materials afford an effective means for extension of vicarious learning . . .*

7. *Effective utilization of audio-visual materials necessitates both pre-service and in-service education in the use of such aids . . .*

8. *Multi-sensory instructional materials afford a means of capitalizing upon individual differences . . .*

9. *Local, regional, and national surveys are needed periodically to determine current uses of available teaching aids, needs for new aids, and methods of facilitating production and distribution of these aids . . .*

10. *Distribution of films should be decentralized to assure more adequate utilization . . .*

11. *The variety of types and uses of military training aids and the evidence of their effectiveness suggest the need for civilian educators to explore the uses of such materials for both new and old educational purposes.*

As stated [. . . previously], military training early assumed the validity of prewar research which indicated the superior effectiveness of multi-sensory instruction. Extensive subjective evaluation led to continual expansion of the use of training aids with the result that military training thus became a huge proving ground for multi-sensory methods of teaching. While controlled research was very limited, empirical evidence was accumulating in hundreds of schools and bases which tended to confirm the effectiveness of using the right aid at the right time and place. Both research and subjectively acquired conclusions of the services thus corroborated the prewar convictions of many educators that multi-sensory methods could increase the amount as well as the retention of learning, create and intensify interest, and provide an orientation of our civilian Army and Navy both socially and vocationally to their new way of living.

The values derived from using graphics, devices, and films thus encompassed more than the mere teaching of facts, principles, and vocational skills. Devices and films also helped men to synthesize academic learning and "get it into action" with the necessary skill and judgment. But the accelerated integration of scientific knowledge into technical proficiency on specific equipments was not enough, for teamwork was equally or more essential than individual competence. The mockup or film often afforded opportunity for developing this teamwork, since equipment, time, and instructor personnel were lacking to have the maneuvers, flights, or cruises employed in more leisurely peacetime military training. Training aids in general, and synthetic devices in particular, were used to convince men that teamwork was a must at the same time that they were shown how to coordinate their respective competencies. Men learned to respect each other as well as the particular "whole" military mechanism of which they were becoming an integral part. Training aids thus played a vital part in making the individual serviceman proficient and in revealing to him the interdependence of men in technical warfare. Additional training on land, at sea, and in the air then brought the final conditioning of men for combat action. While this training sequence from civilian inductees to a combat group was far from perfect, training aids deserve much credit for both excellence of training and continuity of the over-all program. In attacking the diverse training problems emerging during the war — illiteracy, racial prejudice, safety, learning foreign cultures, war "attitudes," rehabilitation, and many others — training aids were widely employed. Films were used particularly in meeting these broader problems, establishing the interdependence of the several arms and services, and in orienting men to the significance of World War II.

In conclusion, this overview of training-aids programs of the Army and Navy implies that such aids should be considered essential to the achievement of the goals of civilian education — the continual development of both that vocational and social competence which will enable youth to contribute to the maximum in a democratic society. Realistic understanding of current personal and social problems and the technological age which engendered them should become the common achievement of American educational institutions. Teachers of both general and vocational education need and deserve to have the aid of the most effective instructional materials that can be produced.

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C. INTERNATIONAL

American teachers frequently ask me such questions as the following:

Are teaching films subsidized in England?

Do British instructional films differ much from American?

Is Australia producing any educational films?

Are audio-visual aids being used in Australian schools?

I have been invited to open this session by telling you something about recent developments in the use of Audio-Visual Aids in teaching in England and Australia.

Audio-Visual Aids in Teaching. What Are Other Countries Doing? England and Australia?

By
LESLIE P. GREENHILL
Pennsylvania Schoolmen's Week. Proceedings of. 1950. Pp. 274-82.

DEVELOPMENTS IN ENGLAND

I shall deal first with England. In order to keep this paper within the time limits that we have available, I am going to confine my attention almost entirely to the use of films and film strips. You should not take this to mean that other types of sensory aids are not widely used. Radio, museum and factory visits, recordings, models and dramatic presentations are all well established aids to teaching in many British schools.

In this discussion of the use of audio-visual aids in England I have selected four aspects of the subject which I feel will be of most interest to you. The first of these is :

I. *The Organization of Visual Education in England*

(a) *The administration of education.* There are between five and six million school children in England and Wales, approximately 30,000 schools, and 250,000 teachers. The local government authorities are charged with the task of administering education

in their areas, through their Education Committees. These committees are known as Local Education Authorities and there are 146 of them in England and Wales. They are responsible for providing school buildings and equipment (except in the case of church and private schools) and for the running costs and general administration of schools. They do, however, allow considerable freedom in the matter of curriculum.

The Ministry of Education is responsible to Parliament for educational policy. It exercises an overriding directing function, but is careful not to dictate to the local education authorities.

(b) *Growth of interest in films.* Until comparatively recent times there has been a good deal of resistance by teachers to the use of films in schools, on the grounds that they may lead to the *"mechanization"* of teaching. However since the war there has been a tremendous growth in the use of audio-visual aids in teaching—largely as a result of the successful use of films in military training, and for informing the public. Now-a-days one frequently hears such statements as: "One of the defects of our educational system in the past was that it lacked life and was too academic. Things (like films) which bring life and reality into teaching are well worthwhile."

(c) *The National Committee for Visual Aids in Education.* The tremendous growth of interest in films on the part of teachers, coupled with the fact that the kinds of films teachers wanted seemed to be in short supply, resulted in the formation of The National Committee for Visual Aids in Education at the end of 1946. The National Committee represents the interests of teachers, local education authorities, and the Ministry of Education. Its main job is to coordinate the needs of teachers with the film production facilities available. I think you may be interested to know some of the functions of this important committee so I shall mention the outstanding ones:

1. The planning of a coordinated policy in visual education.

2. The collection and collation of the requirements of teachers and local education authorities in regard to films and filmstrips for classroom use. (This work is done by panels of educators for various age groups, in different subject areas.)

3. The determination, as a result of this information, of what films should be produced under the sponsorship of the Ministry of Education. (I shall mention the matter of sponsorship again in a moment.)

4. The nomination of educational advisors to work with the film companies who make films at the request of the National Committee.

5. To foster the establishment of regional film libraries and local visual aids committees (parent-teacher groups) in cooperation with local education authorities.

6. To encourage the provision of facilities for training teachers in the use of audio-visual aids in teaching.

The National Committee is doing an excellent job. Already over 100 classroom films have been produced under the auspices of the Committee, and another 100 films and 200 filmstrips are on the way.

At the moment the National Committee is concentrating on encouraging local education authorities to set up and stock regional film libraries in order to stimulate the sale of these films which teachers have requested. Incidentally if any of you are particularly interested in the progress of visual education in England, I should mention that the National Committee publishes an authoritative journal called "Visual Education." This is available from the National Committee at 79 Wimpole Street, London.

(d) *The Educational Foundation for Visual Aids.* Many of you, I am sure, have had trouble at times trying to find out what films are available on a certain subject and where they could be obtained, or where certain kinds of audio-visual equipment could be inspected and purchased. In order to take care of this problem for teachers in England a second national organization was established in October, 1948, called the Educational Foundation for Visual Aids. The Educational Foundation arranges for the production of the films requested by the National Committee, and distributes them when they are completed. In addition, the Educational Foundation sells and rents non-sponsored educational films, and all makes of projectors, on an ordinary commercial basis. A well stocked film library and a show room are maintained and the Educational Foundation is preparing a very complete catalog of educational films and film strips available in England. This catalog will be in five main sections—each of about 150 pages. Three of these sections have already been published. The Educational Foundation for Visual Aids was originally financed by a Treasury loan, but it is intended that it will eventually become self supporting.

As I have said, many people in the U. S. A. have asked me whether educational films are subsidized in England. The answer is no. Most of the films requested by the National Committee are produced and financed by commercial companies at their own risk. The only exception to this has been a first group of about 30 films which were financed by the Ministry of Education in order "to prime the pump." These films will be sold through the Educational Foundation at ordinary commercial prices.

You may be interested to know the prices of educational films in England. Silent films in black

and white average £10 ($28) per reel, black and white sound £12.10 ($35) per reel and color sound £20 ($56) per reel.

II. *The Influence of the British Documentary Film Movement on Educational Films*

This is an aspect of the subject which I feel is sufficiently important to warrant special mention. It is one of the reasons why British teaching films tend to be different from their American counterparts. The documentary film has been defined as "the creative interpretation of actuality." It emphasizes a *simple realistic treatment* of a subject, without the benefit of the professional actors, elaborate studio settings, and artificiality which characterize entertainment and advertising films.

The documentary film movement grew to sizeable proportions in Britain in the 1930's and early 40's under a system of Government sponsorship. A number of documentary film units were established during the war for the production of films to inform the public and for military training purposes. Since the war many of these companies have turned their attention to the production of classroom films either as speculative ventures or with the cooperation of the National Committee or some commercial sponsor. Thus the educational film in England shows little of the Hollywood influence.

Educational experts in England like to classify films into two broad categories: (1) Background films, and (2) Lesson films. Background films are those which, as the name suggests, are suitable for giving children a general background for the study of a particular subject. Many of the existing documentary films made in the past ten years are very suitable for this purpose. A Lesson film is designed to teach specific subject matter to a group of children of specified educational level. It is principally this kind of film which the National Committee is requesting.

III. *The Philosophy of Using Audio-Visual Aids in Teaching*

(a) *Films are aids not substitutes for teachers.* You may be interested to know that there is considerable emphasis in England on the viewpoint that audio-visual materials are *aids* to the teacher, and as such, require careful integration into the teacher-centered lesson situation. There is also a wide advocacy for the use of silent films and film strips for which the teacher can provide his own commentary. This he can mold to suit the objectives of the lesson, and the level of verbal sophistication of his pupils. It is interesting to note that 70 of the first 92 films produced with the cooperation of the National Committee are silent films.

This preference for silent films may be partly a result of the great shortage of sound film projectors which has existed in Britain. This shortage is rapidly being rectified. Three well known American makes (Bell and Howell, Victor and Ampro) are now being made in Britain under license, in addition to several makes of projectors of British design. In 1949 the London County Council sent out 149 sound projectors and 321 film strip projectors to schools in the London area. Three hundred nineteen *London* schools now have sound projectors, whereas there were fewer than 400 in the whole of England and Wales in 1946.

(b) *The visual unit.* Not only is there a demand for films designed so that they can be fitted to a specific lesson situation, but there has been some experimentation with the use of a "package" of visual aids dealing with a particular subject. This package is called a "visual unit," and it may consist of wall charts, recordings, a sound film, silent films, film strips, still pictures, models, and a teacher's handbook (or any combination of these). Each part of the unit is intended to reinforce the other, the idea being to use each kind of aid for the purpose for which it is believed to be best suited. Some of you may have seen the British sound film "Near Home." This was the central film of a visual unit dealing with "Local Studies."

IV. *The Training of Teachers in the Use of Audio-Visual Aids*

(a) *New teachers.* Teacher training in the use of audio-visual techniques may be broken down into two main categories: (1) Training new teachers and (2) Training in-service teachers. I should like to tell you briefly how each of these is handled in England. Most of the teachers who will teach in the primary schools (pupils under 11) take an intensive two-year course at one of the County Teachers' Training Colleges maintained by the local education authorities in various parts of the country. Many of these colleges are now offering courses in audio-visual aids covering such topics as the following:

1. The psychology of the use of audio-visual aids in teaching.
2. The uses of various types of audio-visual aids.
3. The appraisal of audio-visual aids.
4. Film appreciation and its social implications.
5. The practical operation of projectors.
6. The use of opaque projectors and daylight projection units.
7. The organization of a film library and the ordering of films.

Teachers requiring advanced training for secondary school teaching, are required to take a one or two years' graduate course in education at a university. Several of the universities have had well planned courses in the use of audio-visual aids for some time — notably the University of London, Uni-

versity College of the South-West at Exeter, and the Universities at Manchester, Cardiff, and Leicester. Other universities are following suit.

Films in universities. Most of these teacher-training courses involve the viewing of a good number of films. Actually there has been a substantial growth in the use of films in university teaching in recent years. The Universities Films Council of Great Britain was formed in 1948 to promote the use and production of films in British universities.

(b) *In-service teachers.* Training in-service teachers in the use of these newer types of teaching materials is a big job. In England this is being handled in several ways: First, the National Committee, in co-operation with local education authorities, is encouraging the setting up of local Visual Aids Societies in towns all over the country. At these societies teachers from the schools in a district meet regularly to view and discuss teaching films. Parents, too, often attend these meetings. In addition, many of these societies have organized weekend courses in the operation of projection equipment. Secondly, the National Committee has encouraged the setting up of Summer Schools and short courses by teachers' colleges, universities and other educational organizations such as the National Teachers Union. These courses, lasting from one day to two weeks, were held in many parts of England last summer.

The London County Council (responsible for schools in the London area) has been providing very good two-week courses for in-service teachers, in the use of audio-visual aids. These courses are held at the Wandsworth Technical School, and each session lasts three hours—one hour is devoted to a discussion of theory, and two hours to practical training in the operation of equipment.

A fourth method of training takes the form of one-day demonstrations sponsored by various educational organizations. I attended one of these at the Institute of Education at the University of London. Three experienced teachers gave demonstration lessons in their respective subjects, under the general title of "How I Use the Filmstrip in My Teaching." The teacher faced the audience (consisting of about 100 teachers), and the class of about 30 students sat in the front of the lecture room with their backs to the audience.

This type of practical approach is overcoming much of the reluctance to the use of audio-visual aids which is often based on a fear of mechanical gadgets.

Summary of Main Trends in England

Perhaps I can sum up the main trends in England in the following way:

1. Since the war there has been a tremendous growth in interest, in availability, and in the use of audio-visual aids in England.

2. Coordination on a national level is being achieved by the National Committee for Visual Aids in Education and the Educational Foundation for Visual Aids.

3. This coordination is resulting gradually in a closer relationship between the kinds of films which are produced and the kinds of films teachers want.

4. It is recognized that there is a need for some really scientific research, not to prove that films *are* useful aids to teaching but to improve the film itself as a teaching tool.

Developments in Australia

In an American book published in 1948 dealing at some length with the educational film in different countries I read a statement to the effect that "Australia and New Zealand as British Dominions have an educational film history somewhat similar to that of South Africa or Canada."

I feel that this statement needs some amplification, and I think I can show you that there has been a considerable development in the use of audio-visual aids in Australia—particularly in the last five or six years. I have selected four main aspects of the subject which I think will be of most interest to you. The first of these is:

I. *External Influences on the Use of Audio-Visual Aids in Australian Education*

Until the last few years the films and projection equipment used in Australia were predominantly of American origin. Names such as Erpi, S.V.E., and Bell & Howell which are familiar to you, were quite well known there. However, since the war, owing partly to the restricted availability of dollars, and to the increase in production of British-made films and projectors, there has been a spreading of the British influence. Australian production of films and projectors has also been on the up grade. Some figures which I have received recently show that in one state film library, which is probably typical, 50% of the films are of American origin, 40% of British origin and 10% Australian.

II. *Organizations Operating on a National Level*

(a) *The Australian National Film Board.* The Australian National Film Board was established in 1945, on the pattern of the National Film Board of Canada. The Board has been working on the production of a comprehensive range of films which includes documentaries on many aspects of Australian life, and a program of educational films for schools. Recent films cover such subjects as: The Murray Valley, soil conservation, the sugar cane industry, new developments with wool, aboriginal life and

road safety for children. Australian films are available in the U. S. A. from the Australian News and Information Bureau, 636 Fifth Avenue, New York City.

(b) *The National Library in Canberra* acts as the Central Film Library, and is the distributing agency for the films produced by the National Film Board. It also collaborates with the State Film Committees on the appraisal, purchase and distribution of educational films.

(c) *The Commonwealth Office of Education* in Sydney has functions not unlike those of the U. S. Office of Education. Primarily, it is concerned with maintaining educational contacts with other countries; but it is also performing a valuable function in regard to audio-visual methods of teaching by collecting information about new developments abroad and in Australia. This information is widely circulated in its periodical "News of Visual Aids in Education."

III. *Organizations Operating on a State Level*

(a) *The State Education Departments.* Education in Australia is a state function. In each of the six states a State Education Department is responsible for the administration of the schools. In each of these Education Departments provision has been made for a Visual Education Center with a director and technically trained personnel. These centers maintain film libraries and in several instances facilities are also available for making films and film strips. At the present time these libraries carry from 500 to 1000 different titles. Some teacher training courses are provided, and demonstrations of the uses of films in teaching are given at schools and to Parents' Associations.

(b) *State Film Advisory Committees.* A State Film Advisory Committee has been established in each state to advise the National Film Board and National Library on the state's requirements for educational films.

(c) *The State Film Centers.* Each State Advisory Committee receives a Government grant for the operation of a State Film Center. These film centers maintain libraries of educational films which are available to schools and to other types of educational organizations. Each State Film Center receives two free copies of new films produced by the Australian National Film Board. State Education Department Libraries also receive one copy. Additional copies are available at cost.

(d) *The Universities.* I do not know what the present situation is at all of the Australian Universities (there is one in each state), but I can speak with first hand knowledge of the University of Melbourne. I was fortunate in having a hand in the establishment of the Visual-Aids Center there in 1946. This center is, I believe, still unique in the Australian Universities. It has four principal functions:

1. The production of various types of visual aids: films, film strips, slides, wall charts, recordings, etc.
2. The maintenance of a library of instructional films (it has over 1000 titles).
3. The training of teachers in the theory and practice of using audio-visual aids.
4. Research to develop more effective techniques for utilizing visual aids in instruction.

It seems probable that other universities will follow this pattern.

IV. *Teacher Training in the Use of Audio-Visual Aids*

Teachers for the primary grades take their training at the State Teachers Training Colleges. These colleges are fairly well provided with audio-visual equipment, and courses in the use of audio-visual aids in education are now provided.

Secondary school teachers are required to have a Bachelor's Degree followed by one, or preferably two years' graduate work in a University School of Education. Here again I can only tell you what the practice is at the University of Melbourne. There teachers study audio-visual methods within the larger context of a course on modern developments in educational practice. Courses in the operation of projection equipment are also given.

SUMMARY OF TRENDS IN AUSTRALIA

1. I think you will realize from the above that there is considerable interest and activity in the audio-visual field in Australia.
2. Shortage of money for films and equipment, and shortage of equipment itself has been a retarding factor. I believe that these problems are being overcome and that in the near future Australia will have a contribution of its own to make to the field of audio-visual education. ⚬ ⚬ ⚬

D. MENTAL HYGIENE; HOSPITALS

Teachers in our school encounter lack of experiences daily. A group of boys and girls was assembled in the playroom at the University Hospital, ready for a story about a zoo. At the start of the story the teacher noticed a rather puzzled expression on Billy's face. On questioning it was learned that

Providing Experiences for Hospitalized Children

By
MILDRED WALTON
Educational Screen, Vol. 27, No. 7, September, 1948. Pp. 324-26.

Billy, among nine others from one group of twelve, had no idea of what a zoo was. These children, from communities all over the state, had never heard the word before. The teacher very wisely explained about a zoo, supplemented her explanation with a motion picture, stereopticon views and pictures. The children were then ready for the story and were so intrigued with the whole idea that a natural activity project developed.

Bringing "Life" to the Sick Child

In working with any child it is not safe to assume past experience or understanding, and with hospitalized children, it is especially necessary to fill in the background since some of the simplest and most taken-for-granted experiences have been completely missed by these children. This is true for many reasons: the child's illness may have confined him to his bed most of his life; a family with very limited means cannot provide a minimum of rich experiences; even the ordinary experiences offered by the poorest schools are not usually available to the sick or handicapped child who has had little or no schooling.

The sick and handicapped child who is hospitalized must get most of his experiences second-hand or vicariously. While a child is hospitalized or while he must remain in bed, a great many of the experiences which would more or less automatically be his must be planned for, and he must enjoy them vicariously. Concrete audio-visual materials, used in a planned program, can help to make up for a meager background of experience. If a child is taken on an imaginary trip, his vicarious experiences must be made to seem as real as possible. If, through incapacity or long hospitalization, a child misses out on whole blocks of experience normal boys and girls are having, it will leave an indelible mark on him. It is only through a carefully-planned program of rich and varied activities that the hospital or inactive period can be made profitable for his emotional, social, mental, and physical growth.

Helping the Backward and the Bright

Many children in the hospital are retarded in their school work and, because of this retardation, have lost both interest and incentive for further advancement. Visual and auditory materials which will revive interest and help accelerate the backward pupil are invaluable. Our experiences have shown that the dull and retarded pupil advances much more rapidly if supplementary visual materials are used. While the bright child's need for supplementary materials is not so great, if he has access to them, he will get even more from the audio-visual experience than the less intelligent child.

Children admitted to the University Hospital are heterogeneous in age and ability. Since they are here primarily for acute medical and surgical care and there are no facilities for segregation by age and intelligence groups, they must be dealt with, for the most part, either individually or as mixed groups. By using visual materials, the young or backward need not be left by the wayside and the older and brighter can advance fast enough to prevent boredom. Material presented to a group with differing backgrounds and different degrees of interest, even different chronological ages, must be made very real and have definite significance or many in the group will miss its meaning entirely. The dangers of verbalism must be conscientiously avoided.

Children in the hospital have such varying needs in their educational and recreational program, it is necessary to utilize a wide variety of visual and auditory materials. Some of these are used often while others are used occasionally as the need arises.

Motion Picture Experiences

Motion pictures are probably the most popular of all visual materials, both with children and teachers, and are extremely valuable in the educational and recreational program for sick and handicapped children. The "movie show" brings the normal and known experience to children in the hospital. The modern child is often taken to the movies before he can walk and usually is a veteran movie fan by the time he is of school age. Since one of our principal aims is to make the child feel as little different from other children as possible, the bringing of a recreational movie to them once a week is an excellent way to minimize their feelings of differentiation. Through this recreational movie program, we have been able to introduce a number of excellent educational films which are directly related to the child's school program. One of the important aspects of the educational program is that of remedial reading. Many hospital children are retarded in their ability to read and such retardation necessarily holds them back in learning. Motion pictures have been used to supplement the reading program, to stimulate interest in further reading, and to teach many facts and concepts the child cannot get through limited reading. The very best example of this type of film is the

animal picture photographed and narrated on a primary level.

FILMSTRIPS

Filmstrip pictures take second place in popularity but not necessarily in teaching value. They have been used often in wards where movies cannot be shown and in small groups in the playroom and shop. The filmstrip has also been an excellent means of stimulating interest in reading and in furthering choral reading. The principal limitation in using the filmstrip has been the scarcity of available material on a primary level.

SLIDES

Lantern slides are closely allied to the filmstrip both in appeal to children and in educational value. Slides have a special value because the child can participate in their making. A wide variety of slides is available for art study with older children and a few instructive sets are accessible for teaching primary reading and literature. Slides have many possibilities in the teaching program. They can be used for remedial reading, for teaching songs, for vocabulary building, and for spelling. In fact there are few subjects in which slides cannot be used profitably. We have used them to stimulate discussion periods, to encourage expression of ideas, and to help formulate questions.

THREE-DIMENSIONAL PICTURES

Three-Dimensional pictures with their viewers are an excellent means of presenting a wide variety of actual and artistic material to individual children or to small groups. Some of these used at the University Hospital School are the Keystone pictures and viewers; True-Vue, a filmstrip development of three-dimensional pictures; the Hollywood Viewer; and the View Master, a viewer with colored slides in a circular mounting. These pictures are readily adaptable for social studies. In addition to their contribution to the educational program, they are an adjunct in the recreational program where they are especially helpful for bed patients so handicapped that they can use only very light equipment.

NATURE STUDY AND PLAYROOM PETS

Nature study is particularly important in the hospital since so many of these children are completely isolated from the outdoors for long periods. The introduction of live specimens in the form of playroom pets provides valuable experience. In the last few years we have had in our school raccoons, a baby owl, monkeys, a baby lamb, rabbits, ducks, chickens, snakes, alligators, fish, turtles, golden hamsters, puppies and birds. Because of lack of space, we have never had a permanent museum exhibit but have had portable exhibits especially developed by the University Museum. The children themselves have prepared many exhibits to illustrate units of study or new skills in creative art.

"GAMES" AND PUPPETS

Educational games and toys and creative activities, which include such things as making gardens, constructing and furnishing a grocery store, running a cafeteria with special diets as a feature, furnishing and operating a hat store, all constitute excellent visual education for the sick child and all are indispensable if he is to lead a well-rounded intellectual life while his body is mending.

Puppets also have furnished a variety of rich experiences for our children. They have been a medium to help the shy child to adjust, to help the backward child develop his vocabulary, to stimulate interest in school subjects and for many types of dramatization and story telling. The "Adventures of Patches Strong" is a marionette play with the characters representing attractive vegetables and fruits. This play has been used as a recreational activity and also in teaching diabetic children, who must learn so much about food and diets before they leave the hospital.

MUSIC AND RECORDINGS

Music is an intrinsic part of the hospital day's program. It is used to teach appreciation, to teach rhythm in the rhythm band, as a background for play or art work in story telling. Prokofiev's "Peter and the Wolf" has been a valuable aid in introducing the instruments of the orchestra as well as for music appreciation. The Victor set of pictures on instruments of the orchestra is shown as the various instruments are introduced. Sometimes these pictures have been used with accompanying figures and puppets to further fix the concept.

The Soundscriber, a machine for making recordings, has been an indispensable teaching aid. Its educational uses have been numerous and teachers constantly explore new ones. Safety rules for activities in the woodwork shops have been recorded and played to newcomers to familiarize them with "musts for safety." It has been used for unrehearsed recordings which help a child to organize his thoughts and to improve his verbal expression. It has been advantageous in teaching songs and poetry for oral reading by children. Teachers have recorded rules and directions to be played back to different groups. This equipment is easy to manipulate and we feel that one of its most valuable adaptations is in helping children to overcome shyness and to learn to express themselves verbally.

A WHOLE PROGRAM . . . A WHOLE CHILD

To meet the needs of hospitalized children with limited and mixed experiences all known teaching

methods, techniques, and tools must be combined and adapted to enrich their lives for useful and enjoyable living. A well-planned activity program which includes a wealth of visual and auditory materials can do much for the sick and handicapped child in the hospital. It can help him in his initial adjustment to the hospital; it can help to develop normal, wholesome attitudes and prevent the child from developing undesirable behavior. Such a program can help in the child's socialization; it can help develop powers of concentration so much needed in these children; and it can help in bringing increased understanding among parents, children and teachers. The utilization of multiple visual and auditory materials in an activity program is the ideal method of training the whole child.

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This is the story of how one large city mustered a wide variety of resources to bring to teachers a fuller understanding of how education can foster mental health. The combined facilities of two great universities, ably assisted by an alert public library, during a two-year period have reached one-fifth of all elementary school teachers in the Detroit metropolitan area. In the spring of 1947, a group of 30 school leaders and psychiatrists met the call of Dr. Paul Rankin, assistant superintendent of schools for Detroit, and Dr. John Dorsey, professor of psychiatry at Wayne University. Acting on their recommendation, three local foundations advanced funds to subsidize teachers taking a rather unusual course entitled, "Education for Mental Health."

Films Aid Program of Mental Hygiene

By
WM. W. WATTENBERG
Library Journal, Vol. 74, No. 12. June 15, 1949. Pp. 924-25, 978.

The instructional staff consisted of a panel of psychiatrists supported by a number of discussion leaders drawn from university psychologists, local school-guidance people, and social workers. The colleges of Medicine and of Education at both the University of Michigan and Wayne University collaborated. However, discussion leaders were selected from a wide range of institutions and organizations: the Merrill-Palmer School, the University of Detroit, the Michigan Institute for Social Work, the Psychological Clinic of the Detroit Board of Education, the Wayne University School of Social Work, and the counselling staff of the Grosse Pointe and the Detroit Public school systems.

From the very beginning it was realized that teachers would truly use mental hygiene knowledge only as their understanding of facts grew in depth. The job was much bigger than merely presenting

information. Therefore, a multiple approach was necessary. Two phases of such an approach were obvious: the psychiatrists would lecture, and then the students in discussion groups could mull over the material and, by talking and thinking about it, make it their own.

PUBLIC LIBRARY PROVIDES FILMS

However, we did not want to overlook the possibility that dramatic and fictional presentations might provide a down-to-earth focus for class sessions. At this point, the Detroit Public Library provided indispensable assistance. Kurtz Myers, head of the Audio-Visual Division, made available to us both information about and the actual films or recordings which proved the feasibility of devoting a regularly scheduled part of each class session to audio-visual aids. The pattern for each of the 16 meetings was set as follows: a half-hour for showing films or playing transcriptions, an hour for a talk by a psychiatrist and an hour for small group discussions.

The reaction to the films was shown quite clearly, and in an interesting way. The teachers and principals who saw them, recommended them to the program committees of parent-teacher associations and school staffs. After each showing, the Detroit Public Library would receive requests for loan of the film by such groups. This development provided the first objective evidence of the success of the course and the helpfulness of the films. As the value of audio-visual aids in stimulating mental hygiene discussion was demonstrated, an interesting chain reaction developed. Requests became more and more varied. For example, one physician wanted a series of programs as part of a group therapy program for alcoholics. The writing of this very article was interrupted by an invitation to prepare a television program.

Of the films used, the most useful proved to be two on mental mechanisms produced by the National Film Board of Canada. In both the *Feeling of Rejection* and the *Feeling of Hostility* the audience can trace the development of feelings which trouble a young woman. Although both have made what look like good work adjustments, each is troubled: the first, by headaches; the second, by a lonely isolation from people.

STUDY CHILD PROBLEMS

In our use of these films, we have been impressed by the psychological accuracy of details; both are full of those significant little actions which tell so much to the trained observer and which could come to have meaning to teachers. In the *Feeling of Hostility* even the minor characters are fascinating case studies. In fact, so rich is the film in such material that we are planning to show it at least twice to

future groups. Because of its very richness we recommend that it be shown only when a trained psychologist, psychiatrist or social worker is present to act as a discussion leader.

Another very popular and valuable film is *Meeting Emotional Needs in Childhood*, produced at Vassar College. This develops major principles of good mental hygiene as they apply in ordinary schools and families. It has proved to be a self-sufficient unit which needs no support and little interpretation from discussion leaders. We have used it to set the tone of a meeting rather than to stir up discussion. Somewhat similar in effect is *Problem Children*, produced by the Ohio State Division of Mental Hygiene, which shows two troubled youngsters in school settings and tells what their teachers did to help them. Its appeal is definitely directed to teachers.

Also among our favorites is *Children Growing Up with Other People*, a British production. We find that if the audience is warned in advance they adjust readily to the strong British accent used in the sound track and the evidences of austerity in the background. Its many delightfully humorous touches never fail to arouse chuckles. It traces the social development and problems of young people from babyhood to self-assured adolescence. It has served excellently as reference material. We have made similar use of *Life with Baby*, a March of Time subject showing items in the development of normal babies as seen in Gesell's famous laboratory.

For a swift summary of mental mechanisms and basic concepts, such as unconscious motivation, we have used a recording, *Meet Your Mind*, made by the Lewellan Productions. Accompanying the records for normal use is a kit of booklets. For big audiences, a film slide is available.

There were a few films, prepared primarily for psychologists, which proved quite valuable when carefully introduced and then interpreted later in discussion. Among these were *Grief*, by Rene Spitz, and *Baloons* and *Frustration-Play Techniques*, produced by Vassar. They would not be recommended for general audiences.

TRANSCRIPTIONS ARE HELP

As always when using visual aids there were some disappointments. Although its explanation of the physical effects of fear is quite good, the characters in *Emotional Health*, a McGraw-Hill film, were overdrawn. The film shows how a psychiatrist helps a young college student overcome effects of anxiety. The psychiatrists on our staff were vehement in condemning the interview techniques depicted.

Radio programs also proved very helpful. Station WJR was extremely generous making transcriptions of programs on mental hygiene topics. Collections of transcriptions, some very interesting, can be secured from the National Committee for Mental Hygiene. We were also able to purchase discs of some of "The Child's World" broadcasts from the American Broadcasting Company; and, from the Mutual network, two programs, "Children of Divorce" and "War Babies." The last-named, which deals with a teacher's efforts to help a war-disturbed boy, is a special favorite of teachers and is constantly in demand for school staff meetings.

Strongest praise by the psychiatrists was awarded to the "Doorway to Life" series of the Columbia Broadcasting System. These programs take up many different types of children with problems and show different modes of explanation and treatment. The programs have led to some exceptionally fruitful discussion.

The main interest of readers of the *Library Journal* is not so much in the pedagogical details as in the applications for general public service. From this viewpoint they will be interested to learn of an arrangement whereby many of the films we have used are being shown in branch libraries to the general public. Discussion leaders for these showings are provided by the Merrill-Palmer School.

One lesson that we have learned well in the course of our experience is that the resources for carrying forward effective education in mental health are many and varied. Not the least among them can be the libraries of the community. Those of us who are trained in the medical or psychological professions can make a contribution by talking and by helping people to talk; the libraries can supply those other powerful means of communication, the printed word, the record collection, and the reels of film. Together we can make real progress toward our mutual goal of a world full of happy people able to savor the finest fruits of culture.

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E. PUBLIC LIBRARIES

In 1948 the Louisville Free Public Library published a brochure for publicity purposes which, though small in size was impressive in content. Its provocative title was "All This and 500,000 Books, Too." The "All This" in the pamphlet included such innovations as reproductions of famous works of art, a collection

Lucky Louisville

BY
JOSEPHINE JOHNSON

of long-playing records, and a library of 16mm moving pictures, slides and filmstrips —all available to the library patrons of Louisville for loan on their library cards.

The year 1948 was a momentous one in many ways for the Louisville Free Public Library. It saw the Great Books program,

inaugurated in 1947, expand and enlarge to serve more groups. The Neighborhood College project which provides evening classes in four branch libraries continued to increase in popularity. (These classes, supervised by the Division of Adult Education of the University of Louisville and taught by University faculty members, are open to the public for credit on the same terms as the regular classes of the University's evening program, or they can be attended free of charge.) Last, but far from least, 1948 marked the formal opening of the Audio-Visual Department of the Louisville Library in its new and ultra modern quarters in the main library building. Also, in February of that year, as part of a three day program celebrating this occasion the first FM radio station to be owned and operated by a public library went on the air on February 17, 1948 under the call letters WFPL.

Working on the premise that a library must be more than just a store house for knowledge, that a library must in fact put knowledge to work for human betterment, all aspects of the audio-visual media have been explored and are being utilized in increasing numbers as budget and facilities permit.

Fundamental in such a program is, of course, the film library. After four years of operation the film collection in the Louisville Public Library consists of 800 films, 541 filmstrips, and 50 sets of slides. It started with 15 films — all donated. For its age this collection is the largest in any public library according to "Public Library Film Statistics," published by the American Library Association. All films are loaned on individual library borrower's cards, free of charge of any kind. There is no limit to the number of films which may be borrowed by organizations for group use. Home users are restricted to a number of films which total two hours running time. Responsibility for the film rests with the individual card holder who borrows it. A plan which generally restricts school use of film for week days, to leave week ends free for home users, has been adopted and works very satisfactorily. Home film circulation statistics show that this audience averages about 13 persons per film circulated. November through April is the most popular time for this material and the annual report proves that in these months 61 percent of the total films were in use.

The entire film collection is catalogued by the usual author, subject, title method and in addition every entry card is graded according to age appeal varying from the primary up to and including the adult level. The card also indicates which films are especially useful for forum and other discussison groups, and which apply specifically to interest of trade schools.

A useful device to help the staff and the public tell quickly which films are available for loan is a large bulletin board kept on the circulation desk in the Audio-Visual Department. This board lists all the films in the collection by number. When a film is out on loan, that number is covered by a metal disk and a glance at the board shows that it is not available.

The three feature length films which are part of the collection have been very popular. *The Titan*, a life of Michaelangelo, narrated by Frederic March, has been shown by many groups in the city as well as several times at the library. *Pygmalion*, the fine movie version of the George Bernard Shaw play starring Leslie Howard, has been much in demand during recent months. The third film is the version of Shakespeare's *As You Like It* which stars Sir Laurence Olivier and its appeal is, of course, unlimited. The group of psychology films—including such titles as *The Quiet One, Breakdown, Feeling of Rejection* and others have had great popularity as material for group discussion.

One of the most ambitious and successful projects undertaken with the film collection is the Louisville Film Forum. The fifth season of this series was started this spring. Beginning on March 24 and continuing for five successive Monday nights, three-part programs were presented. The first part consisted of the film showing. This was followed by a period of comment and criticism by the guest consultant for the evening. A period of questions and answers and group discussion by the audience brought the programs to a close. Each guest consultant, an expert in his chosen field, contributed his time and talents free of charge. All of the programs were free and open to all persons in the community.

The following sample programs illustrate the pattern of the Series:

Topic: CONTEMPORARY HISTORY.
Films: *The Roosevelt Story* — Highlights in career of Franklin Delano Roosevelt from his election as Governor of New York State to his death — The New Deal.
Consultants: Dr. Laurence Lee Howe, Associate Professor of History at the University of Louisville.
Topic: ART and DANCE.
Films: *Fable of the Peacock* — Dances and music of India, as ceremony and as entertainment. Fable of vain peacock is told with hand and facial gestures and body movements by Lakshimi Waba Singh, outstanding dancer of India.
Consultants: Mrs. Yvonne Abner, Director of Abner School of Ballet. Moderator for the series was William Habich, director was H. E. Salley, head of the Library's Audio-Visual Department.

The forums were held in Studio A of the Audio-Visual Department — seating capacity 110. On many occasions the auditorium was filled well before showing time and other interested persons had to be turned away. When *The Titan* was featured the program was so popular that it was repeated the following night . . .

STATISTICS

The annual reports of the Audio-Visual Department as well as the June 1948-June 1952 report summarizing the four year period of activities prove that fine things have been acomplished in a new and challenging field for the dissemination of knowledge. The report on films used and circulated in that four year period shows the total library film audience was 2,182,113; the average yearly attendance 545,529. The films which have been borrowed for use outside the library total 51,342 for the four year period; the annual total 12,836.

The total audience for all audio-visual materials for the same four year period is 3,188,835 and the annual audience 797,209. This includes WFPL, the library's FM station which started as a modest 10 Watt transmitter, is now a grown up voice with experience. It boasts 250 Watts and four years service to its credit. On the air 14 hours a day, it features the same program for seven consecutive days. This innovation in broadcasting policy permits people to hear favorite works over and over for study and enjoyment and allows them to tell their friends who are also able to tune in. The program features serious music, drama and miscellaneous educational material. In 1950 WFPL was awarded the George Foster Peabody Citation for outstanding public service by a local radio station. It operates, of course, completely non-commercially and enjoys freedom to try many new experiments in broadcasting.

The term "radio" has still another meaning as the "Audio" half of the Department. It means combining various ways of recording and transmitting material using equipment for both disc and tape recording. This collection now numbers approximately 10,000 titles in audio form, adds up to a total of at least ten times greater than the transcriptions library of the U. S. Office of Education, and is probably the largest educational recording library in the country.

SPECIAL PROJECTS

As part of its over-all educational program the library also operates a wire network system of broadcasting which now has 38 city agencies connected with the Audio-Visual Department by direct lines. Included are branch libraries, some special hospital wards, secondary schools, the children's home and the State School for the Blind. Recorded programs are piped out on request. Seventeen programs can be transmitted now at the same time. Special lines to the Children's room, the Reference Department and the Circulation Department at the main library have proved useful and popular for serious study, as for leisure enjoyment.

As a special project highlighting the many excellent recordings in the collection the library inaugurated a program in October 1950 called the Disc Theater. Albums of such outstanding recorded drama as *The Cocktail Party* by T. S. Eliot were played to the studio audience and at the conclusion of each play a discussion period was conducted by an outstanding local authority. These guest consultants were drawn from related teaching fields. A real theater atmosphere was suggested by the use of authentic theatrical posters, play-bills and press releases.

Each successive year proves that more and more people in the community are learning to use and publicize the services of this department. Truly, "All This and 500,000 Books, Too," demonstrates the many ways in which a public library can serve its community. New media, new ideas, new techniques can all become workable functioning examples of these services. They become as necessary and as appreciated as the books which always are the mainstay and the backbone of the library system.

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F. RELIGIOUS EDUCATION

At the Fourth Presbyterian Church in Chicago, few members are aware of an "audio-visual program." This is by design. We regard audio-visual materials as means to an end. When an inspirational sound film is used in worship, it is selected, introduced and placed in a particular sequence because of a goal we hope the entire order of worship will achieve. If a filmstrip does not further the educational intent of a Church School instructional period, it is not used.

How A-V Became an Integral Part of Our Program

By
CALVIN DE VRIES

Ten years ago our church —a downtown church of over three thousand members had a 16mm silent projector, a lantern-slide projector, and two screens. Two years later a good sound projector was added. Five years ago the development of an organized audio-visual program began in earnest. Today a single week may find at least a dozen different organizations requisitioning audio-visual equipment, exclusive of the

Church School, which is by far the heaviest user of the equipment.

THREE-WAY BEGINNING

To begin development of the program we did three things: made a rather general plan for the purchase and development of our audio-visual equipment and program; set out to break down prejudices within the church to the extensive use of audio-visual materials; purposed to make ourselves informed of all equipment and films relevant to our needs.

On the purchase of equipment we found that the best time was just before the end of the fiscal year when there was often a surplus in the operating budget of the church. Some of the less expensive pieces of equipment were purchased directly from the educational budget of the church. We have found it wise to buy the best equipment available —of the type, size, and class we desired. We have always purchased from reliable dealers who could do effective servicing of equipment. We never asked them for preferential prices simply because we were a church.

The purchase plan moved at once into filmstrip projectors and the development of a library of religious materials. From there it has moved out to include all types of audio-visual equipment. More recently we have been concerned with the consolidation of our equipment, perhaps adding a second or third projector of one type, or trading one in for a better model of the same kind.

There were some prejudices against the extensive use of audio-visual equipment five years ago. Most of them resulted from continued faulty showings, usually caused by the hapless combination of a faulty film and a poor projectionist. Our goal became, and still is, the making of every showing as nearly perfect as conditions permit. We were plagued by the bad condition of some films and have adopted a policy of renting from dealers who take seriously the matter of film inspection and care. Every film we use is previewed just before the showing.

We made a practice of securing some of the best new religious films available and showing them occasionally in a Wednesday evening worship service. This won many important friends for the program. I recall one of the first experiences of this type—an excellent film and a faultless showing. One of the church officers came to me after the meeting. "Why, I never thought it would be possible in a church . . . this was splendid!"

CATALOGS VALUABLE

To acquaint ourselves with equipment and material in the audio-visual field, someone from the city. Guides indicating the release of new religious church went to every available film preview in the films and filmstrips and film and audio-visual journals were subscribed to. Distributors' catalogs were classified and placed in large loose-leaf binders. Periodically I myself spend an evening reading the catalogs in an effort to keep up with what is available—one of the most important jobs, in developing a program. The church joined the Visual Education Fellowship and today keeps three complete sets of the Audio-Visual Resource Guide for reference by our organizations. Few publications have proven so beneficial as these guides prepared by the Audio-Visual Department of the National Council of Churches.

SUPERVISION

The entire audio-visual program, with only a few exceptions, is now cleared and organized through our Department of Christian Education. This department has charge of all equipment. An organization desiring to use a projector and necessary auxiliary equipment completes a provided form listing room and time, projectionist, title or material, distributor, and rental charge. This goes to the Department of Christian Education at least three days before the material is scheduled. The building staff has the equipment in place an hour before the meeting. The department keeps a double file of material used: one by chronological sequence, another by title. More and more organizations ask for help in selecting a film, or use the resource guides available. This has helped to develop a more or less uniform standard in materials used.

CURRICULUM ENRICHMENT

The major use of materials is educational. There are times when entertainment films are shown just for the "fun of it." In the educational field the Church School is easily the heaviest user. Although there are special occasions when material is used for worship, missionary or stewardship education, almost all audio-visual material used in the Church School is for curriculum enrichment. The Minister of Education prepares the audio-visual schedule for departments in the Church School three months in advance. This schedule, usually the result of consultations with the departmental superintendent, is finally mimeographed and given to all teachers. Materials are always shown to entire departments rather than to a single class in a large department. Often material is previewed on a Saturday afternoon before its use.

MEMBERSHIP INSTRUCTION

A group of filmstrips on the Apostle's Creed, the Ten Commandments, and the Lord's Prayer, plus assorted additional audio-visual materials, were used

a year ago for a five-month communicant class of youth. Here the audio-visual material formed the actual curriculum. Attempted as an experiment, the results in information assimilated by pupils at the end of the class were so obvious to church officers that they recommended the "experiment" become the regular curriculum—and hailed the class as the best in their memory.

OTHER USES

In women's groups sound films are used especially for missionary education and home and family education. But both filmstrip material and opaque projection have been real assets for missionary education. For parent-teacher meetings we have used sound films, filmstrips, and opaque material for such subjects as sex education, use of the Bible in the home, a pictorial presentation of our own Church School in action.

MID-WEEK WORSHIP

A Wednesday evening worship with a regular sermon provides an opportunity for religious and Biblical films in a worship setting, taking the place of a sermon. The entire worship is planned as a unit. The film—usually of an inspirational nature about the same length as a sermon—is introduced by a short meditation, preceded by a hymn, scripture and prayer related to the subject of the film. Projection takes place from the balcony (the service is in our large chapel) and was made possible by raising lighting fixtures eight inches, plus an extension outlet to the built-in chapel sound system in the balcony. Lights remain out after the film while appropriate organ music, recorded on tape, is played through the sound system for a short period of quiet prayer.

Filmstrip material plus opaque material is used most frequently in the Kindergarten and Primary Departments of the Church School. These media plus sound projection are used for older children, youth and adults. The opaque projector is a valuable piece of equipment for young children because the principle of selectivity can be used with material. Young children are often delighted on a Sunday morning to see their own handwork projected on a screen.

This rapid survey can only suggest how much an audio-visual program can enrich a church's life. We feel that in this process we are still very much in the elemental stage. We have adequately trained operators, a budget that is adequate, an organizational structure that functions. But all of this still really leaves us only at the frontier. Refining the process of selection and utilization is a greater challenge than all that has been done to this point. The real test of a program is not its organization or equipment but what it accomplishes by the standards of religious education. In all our churches this means that we must regard the real problems as those in the area of selection and creative utilization. It is our hope that we shall be able to make the kind of progress in this area during the next five years that we have made in the area of equipment and organization in the last five years.

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We would like to make three observations on the educational content of films for church use: (1) it can't be put there by people who don't know education; (2) it should not be put there by the talk process when the film is being used; and (3) we are accumulating some pretty expensive films whose educational content is thin and out of kelter.

Educational Content

By
WILLIAM S. HOCKMAN

It takes more than good intentions to bake a good cake —even with Betty Crocker helping! We believe that it is impossible for non-educators to make educational films. We believe that those who make films for children should know children as they are in the classroom; know something of the psychology of both teaching and learning; and know especially how material needs to be organized to get certain desired learning outcomes.

We believe that it is educational foolishness to make films that have to be belabored with a multitude of words to enable them to teach something. If people can learn from films, why rely on words? A film does not have much educative motive power built in if it must be shoved off with words. Introductions and follow-ups we certainly want, but not as a substitute for proper structure in the film itself. You can't put the sugar into a cake after it's baked, and you can't make a film educational by getting someone to write a guide. Educational power must be put in by educational thinking when the film is constructed.

If you think the third observation is untrue or exaggerated, just take some of our educational films into the classroom. Try to accomplish something through their use. Check up to see what you did accomplish. We did, and we were amazed. We got reverse results in some instances. We confused the children in others. In still other instances, the children were saved by having learned the right thing through the old talk methods. And the irony of all this is that these films could have been educational; they could have caused good and useful learning to have taken place. And the pity of it is that we, the church, have made some of the worst examples of films with questionable educational content. It is time we do some educational thinking before we start the cameras rolling. ○ ○ ○

No Biblical incidents, episodes, parables or stories have enough detail for film production. Something must always be added, and it is this adding to the core incident which gets the film producer into trouble with those who do not want the Scriptures tampered with even for film-making purposes. Certain Biblical films have been unjustly criticized, we believe, because this problem has not been understood.

Reasonable Supposition

By
WILLIAM S. HOCKMAN

How is the film producer to proceed? Is he to give up the idea because of the difficulties inherent in translating this highly-condensed material into the concrete form of the visual? Or is he to proceed and rely upon inspired and scholarly conjecture to fill in the gaps so that a film story can be put together?

Some churchmen do not comprehend fully the difficulties involved in filming Scriptural material. It looks simple enough until you think about it a little.

BASIC QUESTIONS

Take the simple statement, "Jesus walked through the fields with his disciples." Those words evoke a picture for each of us. We "see" it and we understand. As long as this statement stays in print, no one will have trouble with it. But try translating it into film — then trouble begins at once.

Now did they walk? Who was in front? What kind of field? What time of day? How were they dressed—each one? What was the background scene? Was their walking leisurely or otherwise? No filming can take place until these and many more questions like them are answered by the producer, and since the Scripture does not supply specific answers, those that are found will be obviously non-Biblical. Something must be added to the simplest statement before any kind of pictures are possible.

Most thinking people agree at once that a simple scene like Jesus walking through a field with his disciples can be filmed if the principle *reasonable supposition* is followed in the translation from words to pictures. The producer can't be literal. There is nothing to go on. He must suppose and conjecture, and if these suppositions and conjectures are reasonable and intelligent and based on scholarly information, they should pass.

o o o

G. RURAL SCHOOLS

It was on my way home from one of those "inspiration and gripe" meetings on visual instruction where the "experts" inspire, and the majority of the audience gripe about inadequate facilities.

As I rounded the dusty county corner I saw it. Like most public school buildings its appearance spoke accurately of the material resources and civic pride of the district. Its two rooms and a roof were cheaply constructed of wood, showing no attempt to present a well-kept look. The building set in the sun like a Bowery bum who had long since lost all sense of self-respect.

They Didn't Have Electricity

By
A. J. FOY CROSS

My visit was not anticipated by the occupants of Sunnyslope School so with the consent of the County Superintendent who accompanied me, I walked into the grades 4 to 8 room unannounced. To my surprise there was no choked, embarrassed hush or feverish "good-afternoon-I-see-we-have-visitors" which from my previous experiences in visiting rural schools, I had come to expect. There was a friendly "I'll-be-with-you-in-a-minute" smile and nod from the neatly ginghamed young teacher who stood near a front window with a group of three boys and a girl who were hovering over a home-made relief map of the neighboring three converging apple growing valleys and the three mountain ridges of the area in which the little school was located. As we moved closer we discovered that two of the four youngsters were placing properly labeled match stick pennants at the various spots on the map which represented their own farms and homes. The other two were pasting down to the surface of the relief map a red yarn string over the route of their proposed visit to the apple storage plant.

Turning from the busy little map groups, we watched for a moment two youngsters who were reading at an interesting display table. The table was covered ("a little too crowded," I thought, as my old habit of looking for theoretical perfection arose for a second) with bottled and labeled samples of tree-spray, with booklets and pictures showing how fruit was damaged by certain insects, and with the two Department of Agriculture pamphlets with which the two readers were engrossed.

BLACKBOARD

Next came the blackboard. The first two panels were clean except for the carefully printed reminder at the top of one which read "He had gone riding." This we learned some time later was a carefully calculated device to help establish good speech. The center panel of the board was covered by a neatly drawn map of the state on which were shown rivers, apple-growing valleys, mountains, and prevailing winds. The last two sections of the board were bare except for an unerased calculation that someone had made.

Maps and Apple Growing

At the other side of the room stood a cabinet containing supplies. Over the front of the cabinet hung a standard physical-political map of the state. On a table immediately beside the cabinet was stretched an oil-cloth map of the United States cn which were marked with "crayola," the various apple-growing sections of the county. Four children were busy at this map marking down the rank in apple production of each state of the union. They had at hand for their reference an encyclopaedia volume and a booklet from the Apple Growers Association.

Herbarium and Aquarium

On this same side of the room toward the rear and directly across the room from the old wood-burner stove stood a combined herbarium and aquarium both of which were well stocked and very clean.

The rear of the room sported two neat vertical display boards over which hung a full length frieze on salmon fishing.

There was more in this school. There was a group of happy, alert, busy youngsters and a teacher with similar characteristics. But, it was time for us to leave. Expressing our sincere regrets, because we could not stay longer, we were bid a series of goodbyes. As we were ushered to the yard gate by the teacher, an invitation to return was extended. Knowing my title, but sadly misinterpreting the efforts of all "visual-educationalists," the leader of this good little school apologized. "I wish we could *start* 'visual education' here, but as you see, we don't have electricity to run a projector."

"My dear young lady," I managed to reply, "electricity will never have the honor of helping you *start* 'visual education,' as you call it. The best a projector could do would be to add a little to your already good use of visual-education techniques."

When will we learn what we have somehow done and permitted to be done to cause such narrow interpretations? ⊙ ⊙ ⊙

H. TRENDS

Crystal gazing is for the fakirs, prognosticating is for the seers. We are neither. Prophesying a few years ahead about any thing is hazardous . . . and twenty-five years is like longrange weather forecasting . . . anybody's guess. Weather forecasting deals with cosmic events beyond the control of man. But

Looking Ahead Twenty-five Years in Audio-Visual Education

By
FRANCIS W. and
ELIZABETH G. NOEL

what happens to audio-visual education in the next twenty-five years is decidedly with the control of audio-visual education leaders. If their leadership is based upon an understanding of the principles of democratic education, adequate educational preparation for their work, broad experience in the various aspects of audio-visual education, wise application of such experience to problems in the field, and courage and ability to do the things they believe in, then the future is bright. There is much evidence that such leadership is emerging. Our predictions are based upon faith in that leadership.

It takes no seer to predict an ever-increasing use of these materials by business, industry, and the agencies of government. Advertisers will use them extensively. Pressure groups will seize on these media to propagandize in favor of their special interests. Churches, clubs, and other cultural groups in our society will expand their uses of these materials. And while school use of them will lag behind this procession, the impact of the out-of-school use of audio-visual materials will certainly create a greater demand for their use in educational institutions. Increased use by educators will help to clarify the meaning of "audio-visual education" and to establish it as carefully planned and integrated instructional use of motion pictures, slides, filmstrips, stereographs, study prints, micro-projections, radio, television, posters, maps, charts, graphs, objects, models, field trips, and synthetic training devices. But audio-visual education will be recognized as more than a matter of materials and techniques, or a new way of teaching the same old things. The dynamics of the aids themselves — their content, organization, and manner of presentation — make them potential means of presenting the interrelationship of our interdependent society, of initiating new patterns of life rooted in scientific discoveries and technological advances, and of providing a means of securing the co-operation in thought and behavior so essential to order, progress and peace. The educational use of motion pictures, radio, slides, and filmstrips, as well as of the other aids in the classroom will be accepted as an essen-

tial means of insuring education against isolation from the stream of world events.

Patrick Henry's observation, "I know of no way to judge the future except by the past," is in point here, for judging the past seems to be the safest means of predicting the future. The history of America's accomplishments, of transforming a wilderness into a great agricultural and industrial nation, is one of fulfilling needs and solving problems. The history of the westward expansion, the story of the railroads and highways, the development of the telephone, telegraph and radio communications, and even the history of American education itself, show that the needs of one period become the deeds of the next. To follow this same line of thinking then, an analysis of present-day needs in audio-visual education becomes the basis for predicting the future.

Teacher competency in the field of audio-visual education. This is perhaps the most important present-day problem. Solving it is a continuous process. Even now the quantity and variety of audio-visual instruction materials greatly outflank teacher competency in effective use of them. There is statistical proof of our failure to use even a small percentage of the educational radio programs. Valuable pictorial materials are to be found in magazines, catalogues and pamphlets which can be obtained from many sources at little or no cost. Yet teacher use of these materials is still very limited. The wealth of films, filmstrips, and slides, many of which provide educational experiences, not otherwise obtainable, have only scattered uses in schools. Past experience shows that increased use of all audio-visual materials depends upon teachers knowing of the materials, understanding their educational value, and having skill in using them. Developing teacher competency in the use of these aids (as well as supervisor and administrative competency) is a responsibility of both teacher training institutions and school administrators. It has two aspects, in-service and pre-service training. Teachers' colleges have the primary responsibility for the pre-service aspect. Indications are that teacher training institutions are beginning to recognize the problem. The future will bring courses, units, and practical experiences into the teacher training curriculum which will assure teacher competency in audio-visual education. Many teacher training institutions will require this work. College instructors will use these materials in their classes! In-service teacher training will receive major attention from most administrators and their supervisory staffs. Twenty-five years from now Dr. Frank N. Freeman's observation of twenty years ago, that the skill of the teacher makes the difference between the audio-visual instructional materials being worth while or a waste of time, will still be true, but edu-

cational institutions will have done something to implement his words.

Acceptance by the public and by school authorities of the place of audio-visual materials in a good school program. Long before our period closes, these materials will be considered as essential to the classroom as are comfortable seats, good lighting, ventilation, blackboards, books and teachers' desks. Miss X taking a new teaching position in Little Town will be aware of the values of these materials and will be thoroughly trained in their use. She will expect to find appropriate audio-visual instructional materials. Likewise, she will be given school time to familiarize herself with new materials as they are available. They will be bought from public monies. Pay assemblies with movies will not be used as a source of revenue for purchasing audio-visual equipment, nor will P.T.A.'s be asked to do so. The history of public education shows that the public will support what it believes in.

Better equipment and materials will be available. The quality of audio-visual materials and equipment will be improved as the result of past experiences, current research, and future co-operation between educators and producers. Better materials will lead to greater use and greater use will lead to lower prices. Good utilization techniques requiring class participation will be built into some materials for specialized subject fields. A much wider range of subjects will be available in all the media. New devices will make possible low-cost color and three dimension projection. The stereoscope, modernized, will again return, taking a prominent place in classroom instruction. Vectographs will come into general use especially in the visualization of mathematical concepts. Mechanical equipment will be simplified and lighter in weight. A sound motion picture projector will be manufactured especially for classroom needs. These will be probably followed later by small individual desk projectors for use by individual students.

Solution of two conflicting trends. Modern school design seeks to admit more and more light into the classroom and bilateral lighting even now is considered a must on the part of many school architects. Projected materials at present require reduction or exclusion of light. Present darkening facilities leave much to be desired. For those who want daylight projection the ultimate solution may be projectors with two or three times as much light power combined with a refined, improved translucent screen and reflecting box. Special classrooms for the use of projection materials have not solved this problem, nor will they. Audio-visual materials achieve their optimum educational value when they are used in the regular instructional environment. Extensive and in-

tensive use of those materials during the next twenty-five year period will make special projection rooms unequal to the demands for their use. Every classroom will provide adequate facilities for the use of all audio-visual materials.

Research. Research studies to prove whether or not audio-visual materials are more effective than are other teaching tools or whether one aid is better than another aid will, for all practical purposes, cease. Research will be directed primarily into four constructive channels: (a) Ways of producing better materials to meet educational needs; (b) Ways of utilizing the materials more effectively. (Research will provide psychological data upon which to base sound utilization techniques. These techniques will probably vary greatly in terms of the materials and the purpose for which they are used.) (c) Ways of using these materials as contributions to curriculum revision, and (d) Ways of developing skills in seeing and hearing. Seeing and hearing comprehension will be given as great an emphasis in schools of the future as is given at present to reading comprehensions. Dr. Samuel Renshaw, of Ohio State University, has demonstrated that tremendous gains in learning are possible when people have developed seeing and hearing skills. Naval aircraft recognition courses, based upon his theories, trained students to recognize various kinds of airplanes in as little as 1/250th of a second. Teaching pupils how to see and to listen will be as fundamental as teaching them how to read and write. Continuous evaluation of materials and practices will also characterize this period.

Decentralization of materials. Armed-force experience has clearly indicated that as intensive use of audio-visual materials develops the need to have them immediately available increases. Intensive use requires that the materials be placed as nearly as possible to the point of use. Our twenty-five year period will see continuous decentralization of distribution centers. As the unit costs of materials and equipment decrease the time will come when many schools will have substantial depositories located in each building. This will make possible the use of these materials by individuals and small groups for reference and study purposes much as they use libraries. Provisions will be made for cubicles where students can view motion pictures, film strips, lantern slides and other projected materials. Similar rooms will be available for auditioning radio transcriptions, records of speeches, and dramatic plays. Visual and auditory "reference" materials will be available in sets on various subjects, much as encyclopedias are now. Books and audio-visual materials will be correlated for certain core courses or units common to most curriculums. Teacher manuals or guides will accompany materials developed for school use; pictorial

workbooks will be used in conjunction with films; and units comprised of combinations of aids will be in regular use. Textbooks and encyclopedias will contain references to appropriate audio-visual materials.

Audio-Visual Education Departments. A school district not providing its teachers with the services of an audio-visual department or teacher service center will be considered "retarded." These departments will provide teachers and school staffs with a wide range of audio-visual materials which will be as easy to obtain as books now are from the library. Each department will be staffed by professionally competent personnel, who will provide professional counsel in the selection, utilization, and evaluation of the materials. The Department's offerings will vary considerably depending upon the school curriculum, the size of the area it serves, and the financial ability of the district to support an adequate educational program. Many states will provide equalization funds for the support of these departments and will exercise considerable direction over them in regard to their standards of educational service. Most states will have an audio-visual education office at the state level to give direction and overall leadership to the movement and to assure that the use of these materials is not conceived alone in terms of subject matter and grade levels.

International aspects of audio-visual education. This movement is world wide. Broadly conceived it has particular significance to the period of international understanding and co-operation which we are entering. Discussions by one of the authors with high authorities from the various governments of Europe and Asia who were attending the Conference of Allied Ministers of Education in London early in 1945 made it evident that they understand the importance and significance of the movement. All were convinced that no educational system of the future could be successful except as it provided for extensive and intensive use of audio-visual materials. The next twenty-five years will see most nations of the world making use of these as "basic" teaching materials. Many undeveloped areas of the world, for example the northern regions of America and parts of Central and South America, Africa, and Asia have skipped several stages in the development of transportation, going directly from primitive means of travel to the airplane. Likewise nations which now have inadequate educational systems will omit intermediate stages of educational development and will go directly to the use of audio-visual education materials in their efforts to eliminate illiteracy and raise the educational level of their citizenry.

Educational Screen in 1970. To paraphrase Tennyson's famous lines from "The Brook," "Men may

come and men may go but I go on forever"—magazines may come and magazines may go but Educational Screen goes on forever, if it continues to maintain high professional standards and a well-defined editorial policy, to give the kind of leadership referred to in this forecast.

To recapitulate, we predict:

1. Good leadership in the field by audio-visual education specialists.

2. Extensive use of audio-visual materials by out of school agencies.

3. Recognition of the broad concepts of audio-visual education as applied to the educative processes.

4. Great emphasis on the development of teacher competency in both its pre-service and in-service aspects.

5. Public acceptance and financial support of audio-visual education in a good school program.

6. Development of better equipment and materials.

7. Adequate physical provisions for the use of audio-visual materials in classrooms.

8. Extensive research leading to better materials and equipment, proper curriculum placement, better utilization, and the development of skills in seeing and hearing.[1]

9. Continuous decentralization in the location of materials.

10. Widespread development of professionally staffed Audio-Visual Education Departments offering broad material and professional services to school staffs.

11. Use of audio-visual materials by most of the nations of the world in their educational programs.

12. In 1970 Educational Screen still a dominant influence in the field of audio-visual education.

A rosy picture has been painted. But the high-road we are to travel is not without its chuckholes and dangerous ledges. Failure to recognize and avoid these areas can drastically alter predictions. Here are some words of caution.

Those responsible for directing audio-visual education programs in schools should avoid overstressing any single aspect of the field. Such a tendency to concentrate on production or distribution of audio-visual materials is already apparent in some school systems and institutions of higher learning. This overconcentration has meant the neglect of the equally important problems of selection, utilization, and evaluation. It also has meant that many universities do not view audio-visual problems as more highly specialized than guidance or measurement problems. Often it is regarded only as an instructional device to teach existing subject matter—not as a means of altering the content of courses, of effecting changes

in the placement of materials in the curriculum, of revising curriculum and perhaps altering actual school organization and administration.

In the next few years the public may be oversold on a pseudo-type of audio-visual education and there is a danger of substituting over-expansion for growth. This thing can be a Frankenstein to education. As the production and sale of these materials become big business, groups not having the best interests of education at heart may bring pressures on school people that will threaten the healthy development of the movement and lead to experiences paralleling those of a generation ago in the textbook field.

Current enthusiasm for tailor-made materials, produced for our so-called specific needs, may cause us to pass up a wealth of audio-visual materials of great potential value and limit the broad development of the movement. Remember, Defoe did not write *Robinson Crusoe* for school use. Neither were the great works of literature, music, and art produced originally for school purposes. They have come into general use in schools because they were good and at various times have fulfilled school needs of instruction. So, too, many of our fine photoplays, documentary films, and radio programs do have value in educational institutions even though they were not planned for a specific "grade level or subject."

Unless educators conceive of audio-visual education in terms of its broad definition and in relation to the objectives of education in a democracy, they will gradually be forced into a position of choosing and evaluating materials only in terms of grade levels, subject matter, courses of study, and their contribution to the teaching of the so-called "fundamental" or the three R's.

The dynamics of these materials are not fully recognized unless they are also selected and used in terms of their potential capacity to build attitudes and appreciations, to give understandings, to develop skills and critical thinking, to present and interpret modern problems, to communicate real-life experiences, and to insure education against isolation from the stream of events.

If school people continue to insist on a strictly academic approach to the production and use of audio-visual materials to further fortify existing concepts and traditional patterns of education, they will miss the intrinsic values and full potentialities inherent within the materials themselves. If this happens, then agencies outside the schools that use such materials because of these values, will by the sheer weight of the extensive use of them exercise more influence on the behavior of children and adults than

1. Editorial note: The reader should consult Part VII for a review of the extensive research in the audio-visual field.

will the schools. This situation even now challenges institutionalized education.

Lastly, we must continuously check our own thinking and appraise our efforts in the field of audio-visual education and from this critical analysis revise our thinking and reset our goals in order to meet the ever-changing needs of education for today's world. This is our Polaris. Audio-visual education is so important that what educators do about it may in a large measure determine whether or not the schools will continue to play the major role in the education of boys, girls and the men and women of our modern, democratic society. The next quarter of a century will sit in judgment on what we do today.

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As I write this my memory goes back to the early twenties. Those were the days when visual educators were toying with bulky reels of 35 mm. film which had to be shown in fireproof booths. Some projectors were portable if you were accustomed to carrying 100 pound sacks of cement. Wire had to

Audio-Video Distrust of Verbalism Gives New Impetus to A-V Education

By
F. DEAN McCLUSKY
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be strung long distances to reach electrical outlets. Darkening facilities for classrooms were few and far between. Films made specifically for teaching purposes were virtually nonexistent. There were, however, stirrings at theoretical and practical levels which were omens of things to come.

Schoolmen in the thirties were cautious because they had difficulty pinning down the essentials, equipment-wise, of an audio-visual program. For example, in the 15 year period from 1920 to 1935 school administrators were asked to absorb shifts from 35 mm. silent film to 16 mm. silent film, then to 16 mm. film accompanied by sound-on-disk, and finally to 16 mm. film with a sound track. As soon as a school went through the tooling-up process it would find that its equipment was out of date. Furthermore, educational radio was vigorously promoted, the candid 35 mm. camera appeared with its smaller slide, which necessitated an off-standard lantern to show it, and the slidefilm entered the scene.

All of this was confusing to the mind of the administrator who was attempting to build a long-range program in audio-visual technics of teaching. What to buy, what not to buy, when to buy, and when not to buy posed decisions requiring insights which were difficult to acquire.

Then came World War II. The training program for the armed services dramatically utilized all types of teaching materials. Audio-visual instruction as a concept was crystallized and has become a force in mid-century education. The evidence is all about us.

It is the exception now for cities with populations of more than 200,000 to be without an audio-visual administrative unit. Every county in the state of California has a full-time or part-time audio-visual director and many have large libraries of materials which are distributed to schools. Twenty-five years ago the number of audio-visual specialists holding doctors' degrees could be counted on the fingers of one hand. The *Phi Delta Kappan* for February 1951 and February 1952[1] reports no less than 50 doctoral theses in progress in the audio-visual field. The number of institutions of higher learning offering audio-visual courses in 25 years has increased from approximately 21 to 245. The National Education Association has established a division of audio-visual instruction at its headquarters, with a full-time staff. (This is not to be confused with the department of audio-visual instruction of the N.E.A. founded in 1923.) There are now enough directors of audio-visual instruction at the state department level to form a national association. There is a national association of university film producers. The production of materials has increased so rapidly that it is now essential to have all the latest catalogs at hand. One company issues an accumulative catalog of films and slidefilms. There are tens of thousands of projectors of different types and makes in use in schools today.

Trends Indicated

Examples of recent growth of audio-visual services in specific cases are indicative also of the trends elsewhere. Five years ago Los Angeles City College purchased about a dozen pieces of audio-visual equipment. Then it established an administrative service unit. Last year, 1951-52, the records show that more than 37,000 on-campus loans were made of audio-visual materials and equipment — this despite the "come and get it" policy of the center. In September 1951 the department of audio-visual instruction for Santa Barbara County, California, recorded 2950 loans. This increased to 4500 in September 1952.

One of the oldest audio-visual departments in a city school system is located in Pasadena, Calif. The history of this administrative unit goes back to the

1. The February 1952 *Phi Delta Kappan* lists 27 theses in progress in "audio-visual education" but states that "aids in specific subjects are listed with the subjects." (p. 319). A check of the theses under other headings shows that there are at least 23 additional theses which could be included under the audio-visual classification. The 27 theses under the audio-visual classification were reported from 13 universities.

twenties. Its film circulation records show that 8645 reels of film (a 400 foot 16 mm. film equals one reel) were distributed to the schools in 1945-46. The number of reels circulated in 1951-52 was 52,007. The number of film orders filled for teachers in 1945-46 was 2120, and in 1951-52 it was 19,293.

At the University of California, Los Angeles, the number of reels of film used by practice teachers in 1945-46 was approximately zero. The latest figures available show that in the year 1949-50, 1889 "reel days" of film were booked from the U.C.L.A. film library for use by student teachers at U.C.L.A.

How Best to Do It

These examples of trends in the utilization of audio-visual materials in a city college, a county, a city school system, and a university located in California reflect California's required training in audio-visual methodologies for teaching credentials. Our problems of the future will be in the how-best-to-do-it category rather than in a promotional one.

Educators today are in an excellent position to take the television problem in stride, if the voice of experience is heeded. We have learned many lessons during the past quarter of a century about the utilization of films, radio and other audio-visual materials in schools. Standards as to equipment, budgets, materials, technics of use and evaluation are now at hand to guide the administrator in planning long-range programs. If he does not use these standards he must take refuge in his own ignorance.

Up to this point we have been discussing events on the operations level. Let us now examine some of the advances in theory. Twenty-five years ago audio-visual materials were used chiefly to impart facts or information. Now we are beginning to recognize the importance of audio-visual materials in developing skills, in problem solving, in teaching concepts through enriched experience, and in the formation of attitudes. Now we are coming to the realization that the incentive or motivating power of audio-visual materials can be harnessed to spearhead learning. In other words, they are more than aids. They are being used successfully as direct learning experiences. For example, witness the experimental results recently reported from Pennsylvania State College. There skills are being successfully taught with paced films without the aid of teachers.

Harry H. Haworth, head supervisor, audio-visual services, Pasadena city schools, gives us this view of trends—:

"As I think about trends over the years and try to look toward the future, there is a definite movement toward including audio-visual people as an integral part of the division of instructional service, curriculum department, or whatever you choose to call it. . . . The audio-visual departments that have made the greatest achievements are those in which the director has worked very closely, a member of the team, with the curriculum staff and the supervisors. Too often where there has been a lack of progress, the audio-visual person has been considered an outsider, a gadgeter, and has been trying to run his own program entirely on his own abilities.

"I feel very strongly that the younger person coming up with expectations of devoting most of his professional life to the audio-visual field should have a very broad training in the field of education, emphasizing the curriculum and educational psychology. He should have a thorough understanding of how we learn, for he can contribute to making learning effective."

Grass-Roots Research

Twenty-five years ago critical studies of language as a tool of communication were relatively few. Now such grass-roots research is increasing in importance. That this is a trend of major significance will be the subject of the paragraphs that conclude this article.

Opposition to verbalism has been one of the key ideas in the creed of audio-visual specialists. They have led crusades against verboseness for decades, from the point of view both of theory and of practice. Even though the cause was backed by the pronouncements of revered leaders in education and the knowledge that primary verbal meanings develop from objective sensory experience, it has seemed that progress in the struggle against verbalism has been measured by one step back for each step forward. However, help is coming from many points of the academic compass.

Students of semantics have effectively demonstrated many of the follies of verbalism. Specialists in the teaching of reading now stress the acquisition of meaning rather than the mechanics of the reading process. Note particularly the studies that have produced graded word lists and readability formulas. Some savants apply the word "reading" to the perception of objects and pictures. They contend that reading an object for meanings is the same process as reading words. In short, semanticists, reading specialists, and A-V-ites are seeking the solution of a common problem.

Horizons Extended

The analysis of propaganda and of advertising technics has given rise to a new academic label, "mass media of communication." Prominent among the media being studied are motion pictures, radio, television and the comics. These tools of communication are in the sphere of interest of the audio-visual specialists. So their horizons have been extended by the studies of communicative technics. The faith

of the teacher who employs audio-visual materials in instruction has been strengthened by the knowledge that others are contributing to the common cause.

Furthermore, *communication* as a concept has been accorded respectability. A number of universities are offering courses in communication and a few have established departments for the study of communicative technics.

Heretofore, universities have offered courses in light, optics, printing, photography, electronics, sound and acoustics. But few courses in the employment of these tools to influence the behavior of mankind have been given. As the study of communication develops at the university level, it may be that audio-visual departments, as we know them, will be expanded into broader administrative units bearing the communications label. In any event, the problem of verbalism will continue to receive attention, not only in the classroom, but outside it as well. Also the place of nonverbal experience in instruction will be accorded careful scrutiny.

One product of the studies of verbalism, of semantics, of reading, of propaganda, and of communication is that blind uncritical faith in language as the *sine qua non* of instruction is being shaken. No one would question the desirability of developing in individuals the ability to use language effectively and expertly. But language is a means of expression, not an end in itself. The alarmists who predict that television will produce a race of non-readers and videots in 50 years pass over the more insidious decadence of language as a tool. This is with us now. The evidence of intellectual slovenliness and dishonesty in the use of words is easy to observe for those who have eyes to see.

Quo vadis audio-visual? The facts show that "audio-visual education" is not a flash in the pan. The utilization of audio-visual materials in instruction has spread steadily during the past quarter of a century. This will continue until the audio-visual concept permeates education at all levels.

INTEREST GROWS

The growing interest in developing more effective media of communication will give impetus to the movement. Another motivating force will stem from the unpopularity of verbalism. People are becoming more and more distrustful of fancy phrases. They want plain talk and understandable presentations. The establishment of serious graduate study in audio-visual technics at the university level is a recognition of the need for professionally trained personnel to help in the task of making learning and communication effective. If the schools of today are to keep pace in practice with the technics of communication in use in the larger community which they serve, studies in audio-visual education or its equivalent are a must for the teacher of tomorrow.

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TEN COMMANDMENTS FOR FILM USERS

by W. B. HERRON

1. Thou shalt know the operation of thy projector so that thou mayest judge the quality of projection.

2. Thou shalt not show a film on a machine that is unclean and showeth dirt on the screen.

3. Thou shalt not show a film which thou hast not previewed. (Would you attempt to teach from a book that you have not read?)

4. Thou shalt not show a film which has no relation to what is being taught.

5. Thou shalt point out the lesson to be learned from the film before showing.

6. Thou shalt not consider that the student can learn all that there is to learn from one showing of an excellent film.

7. Thou shalt not use all of a film if only a part has any value in your course.

8. Thou shalt evaluate the lessons learned through the use of the film by proper discussion and by oral or written testing.

9. Thou shalt not steal a film from thy neighbor by holding it over time.

10. Thou shalt not order a film because it encompasses a period, because it brings color to the eye, nor because of its sonorous qualities; but thou shalt carefully weigh the merits of the film as to its ability to teach the student some worthwhile lesson. (*Teaching Tools*, Vol. 1, No. 2, 1953.)

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